TECHNOLOGY DEPT.

Gas Journal

VOL. 279 106TH YEAR. LONDON, JULY 7, 1954 NO. 4753. PRICE 1/3

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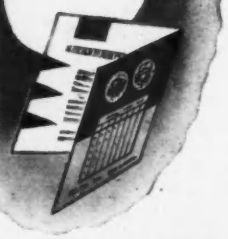

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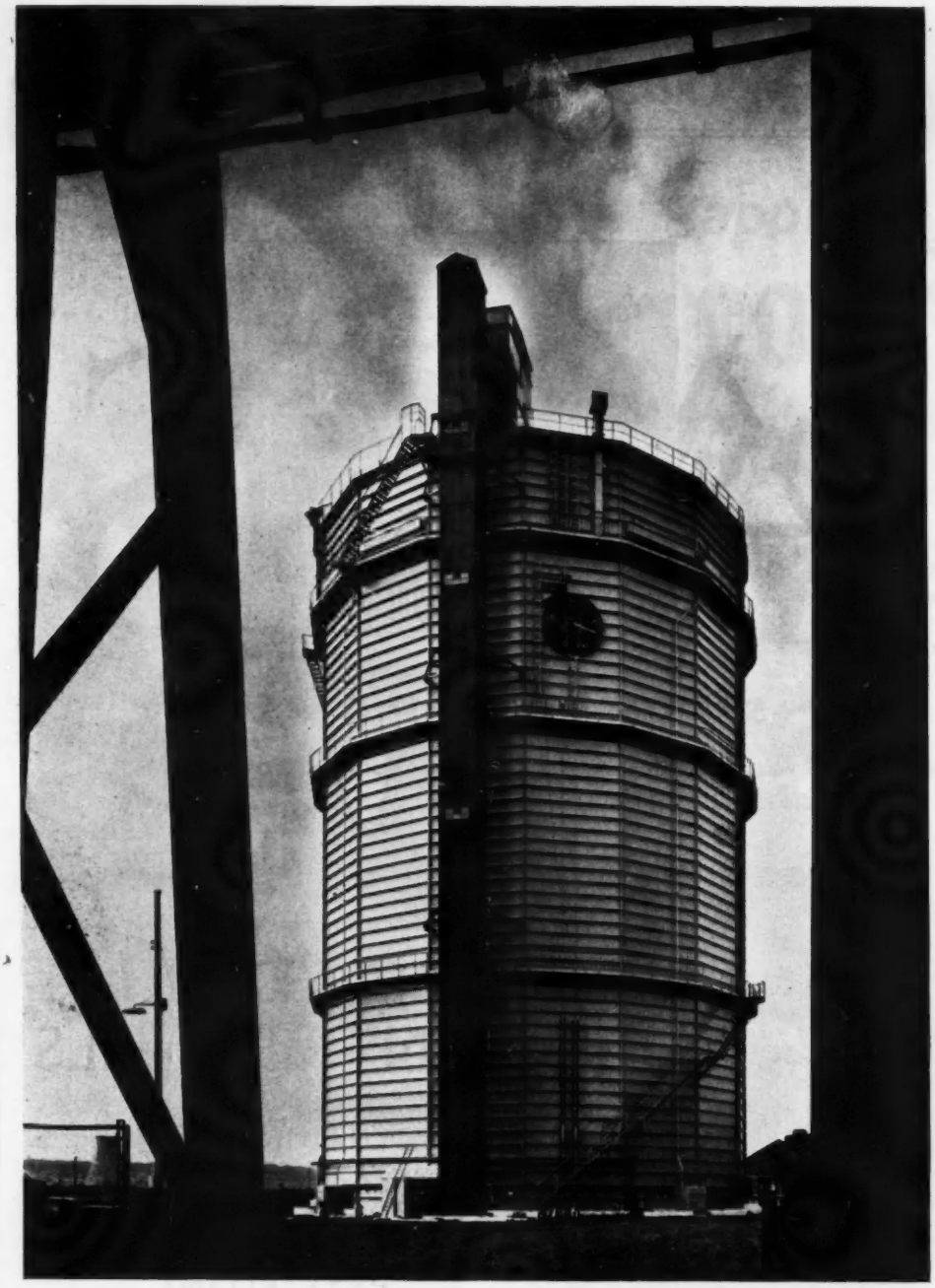

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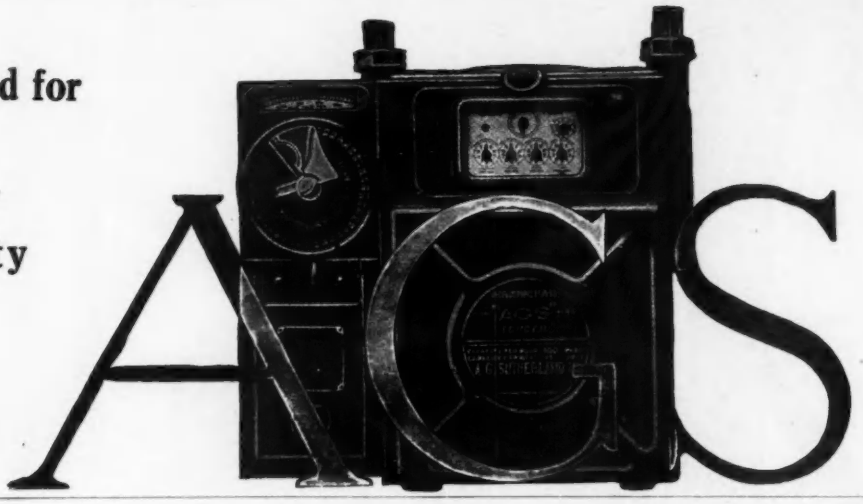

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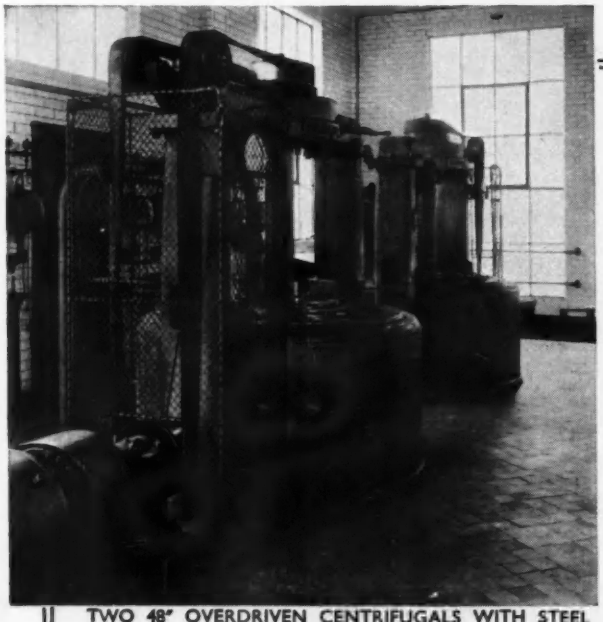

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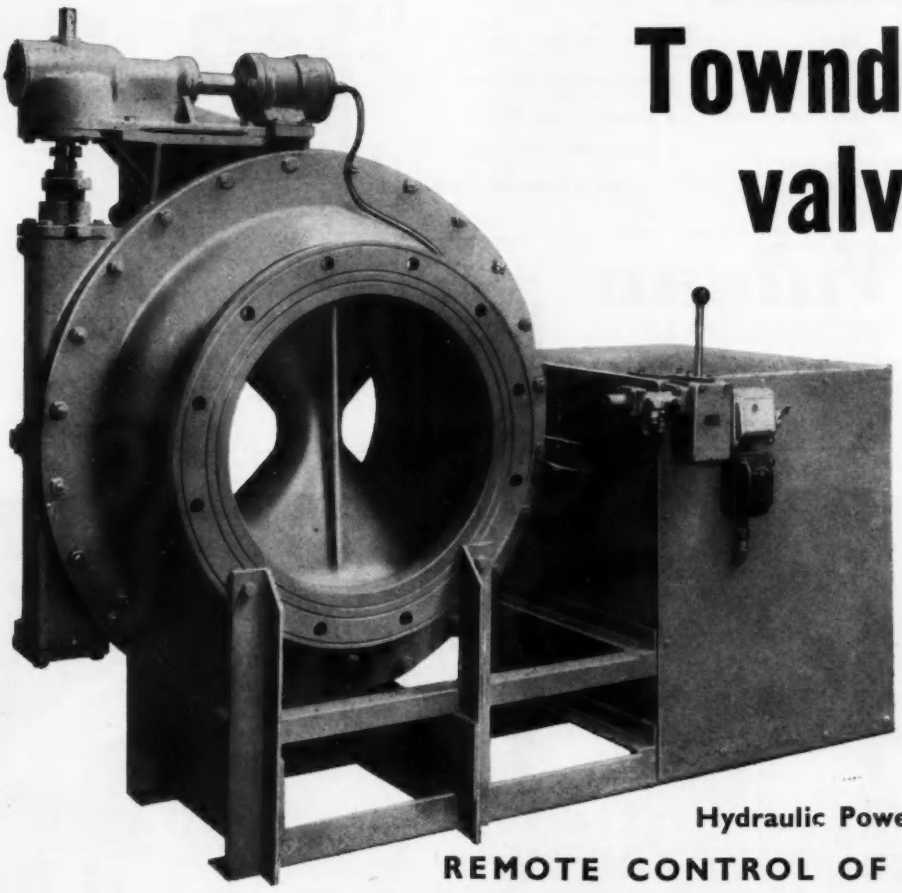

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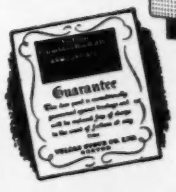

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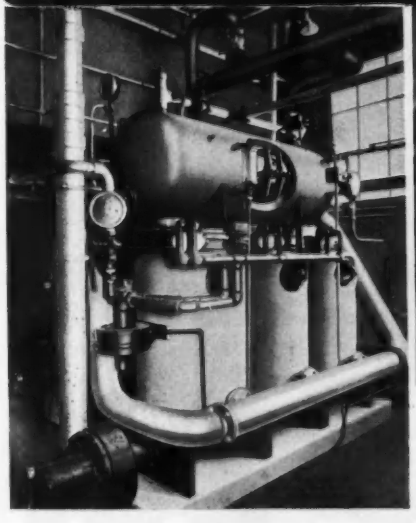

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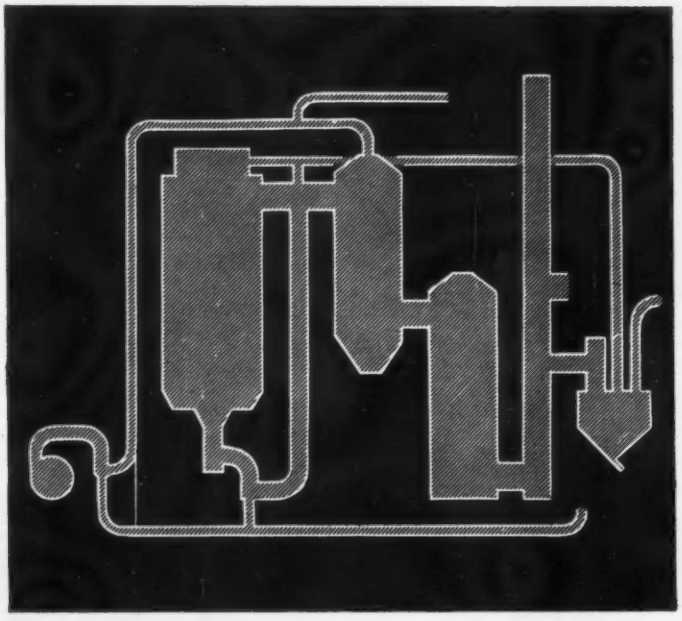

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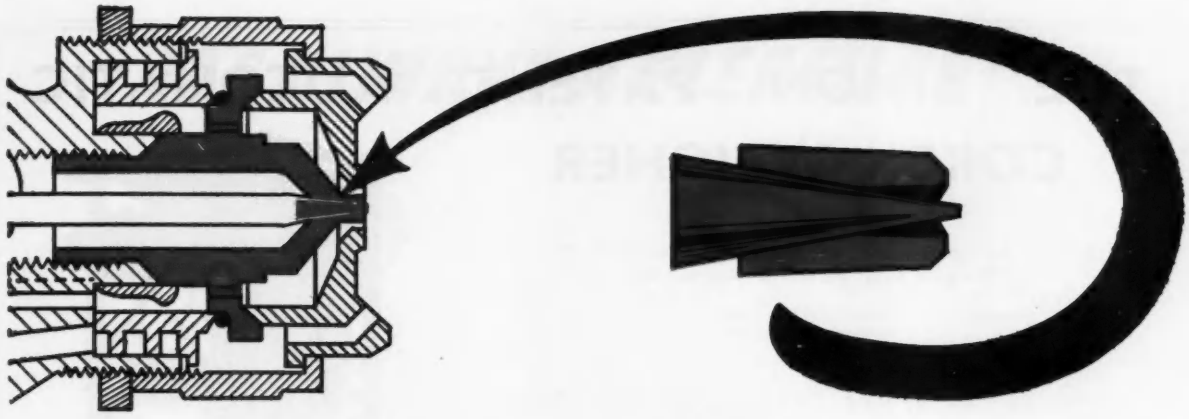

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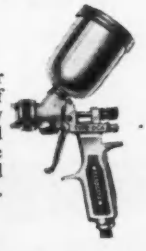

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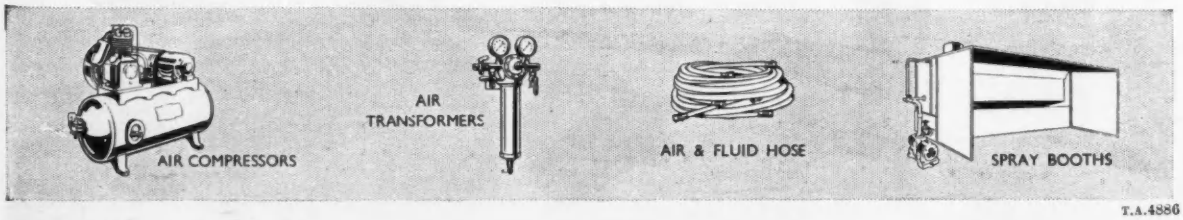

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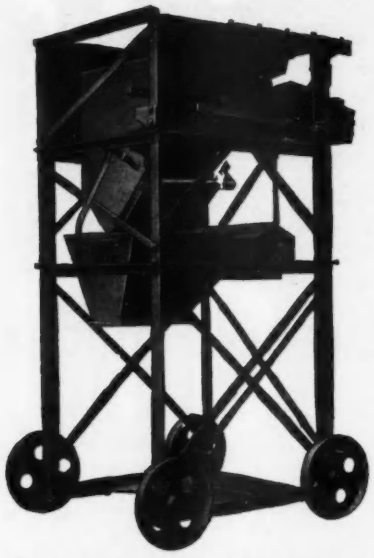

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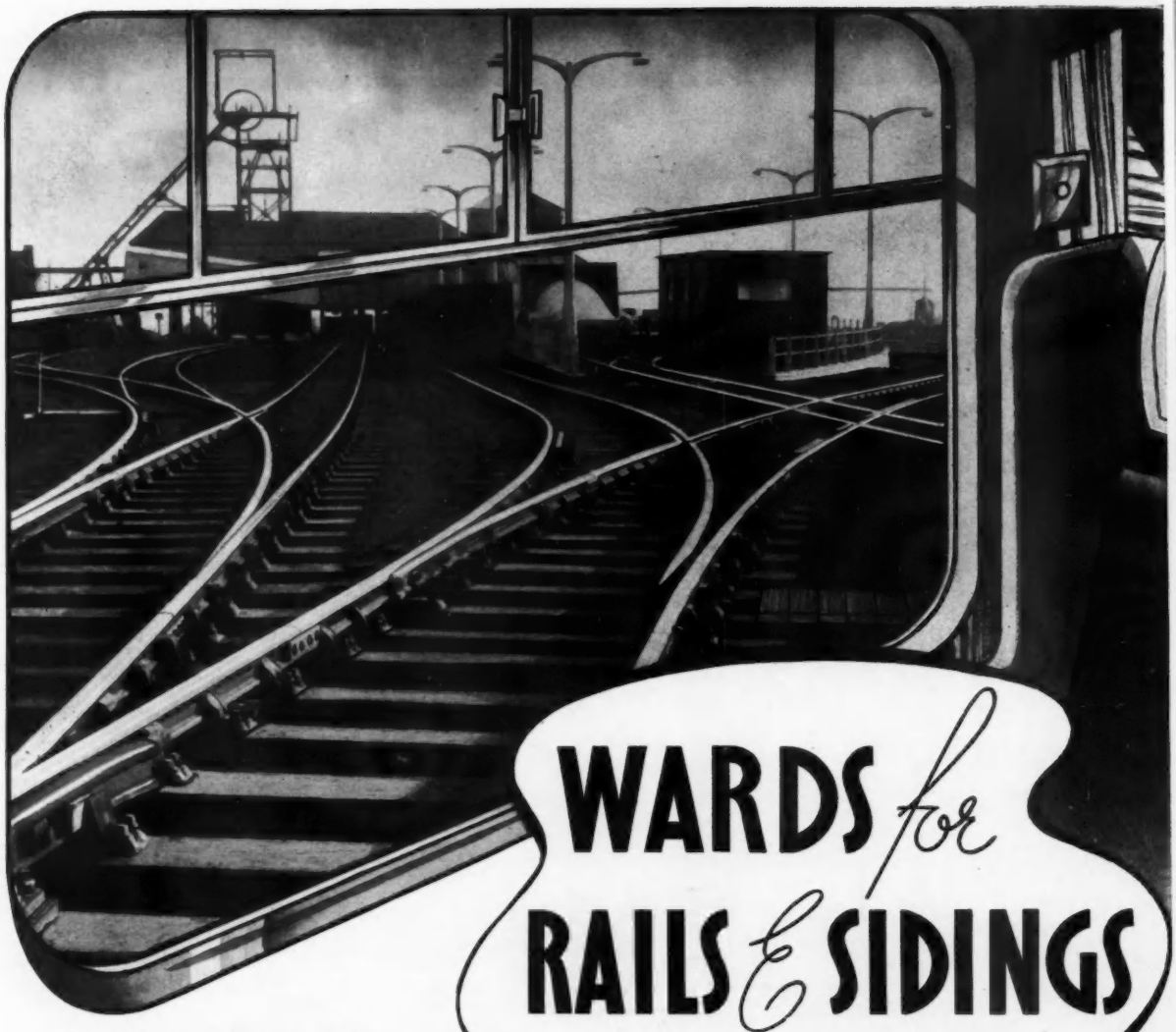

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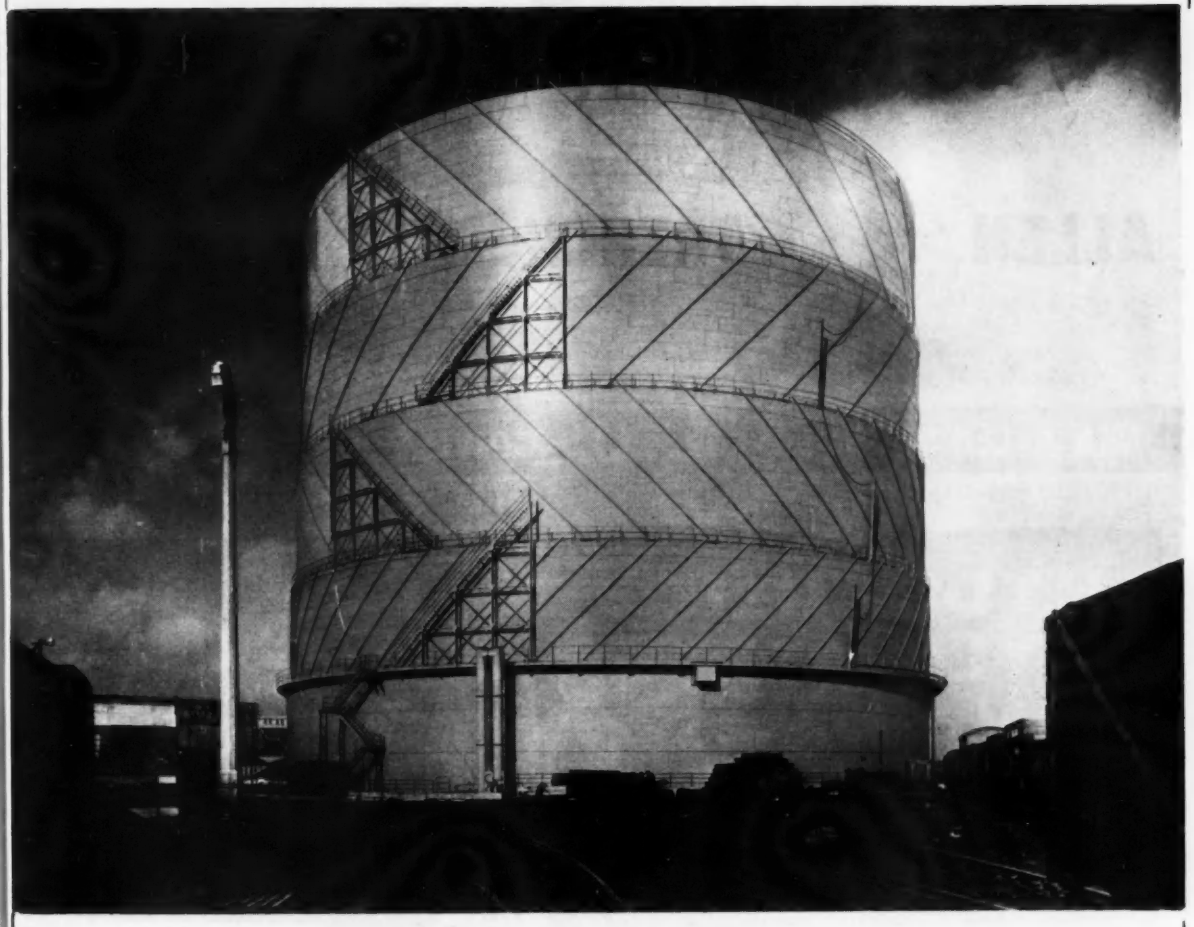

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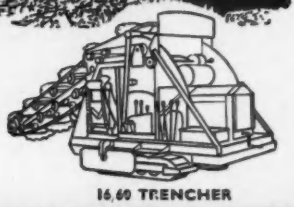

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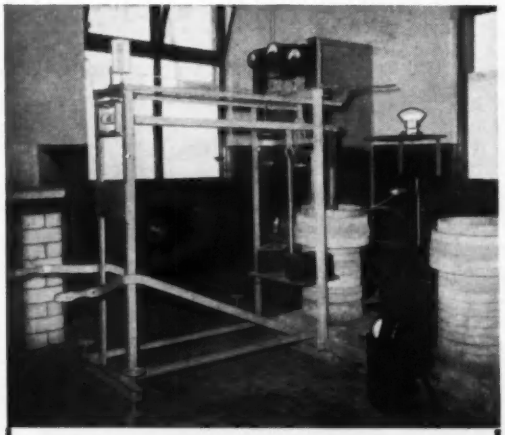

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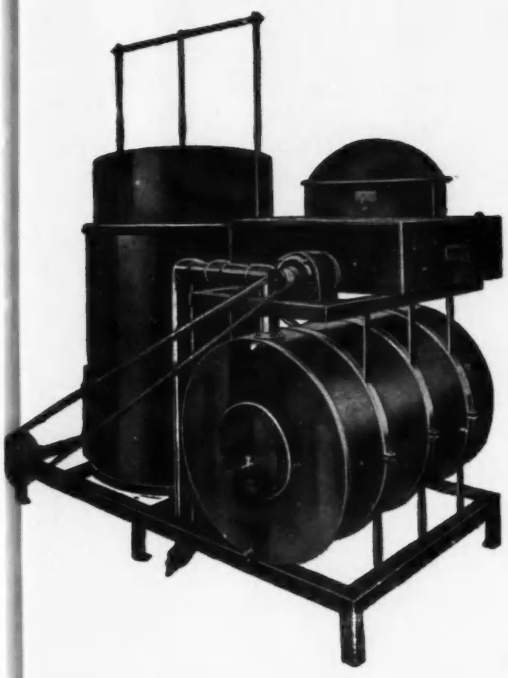

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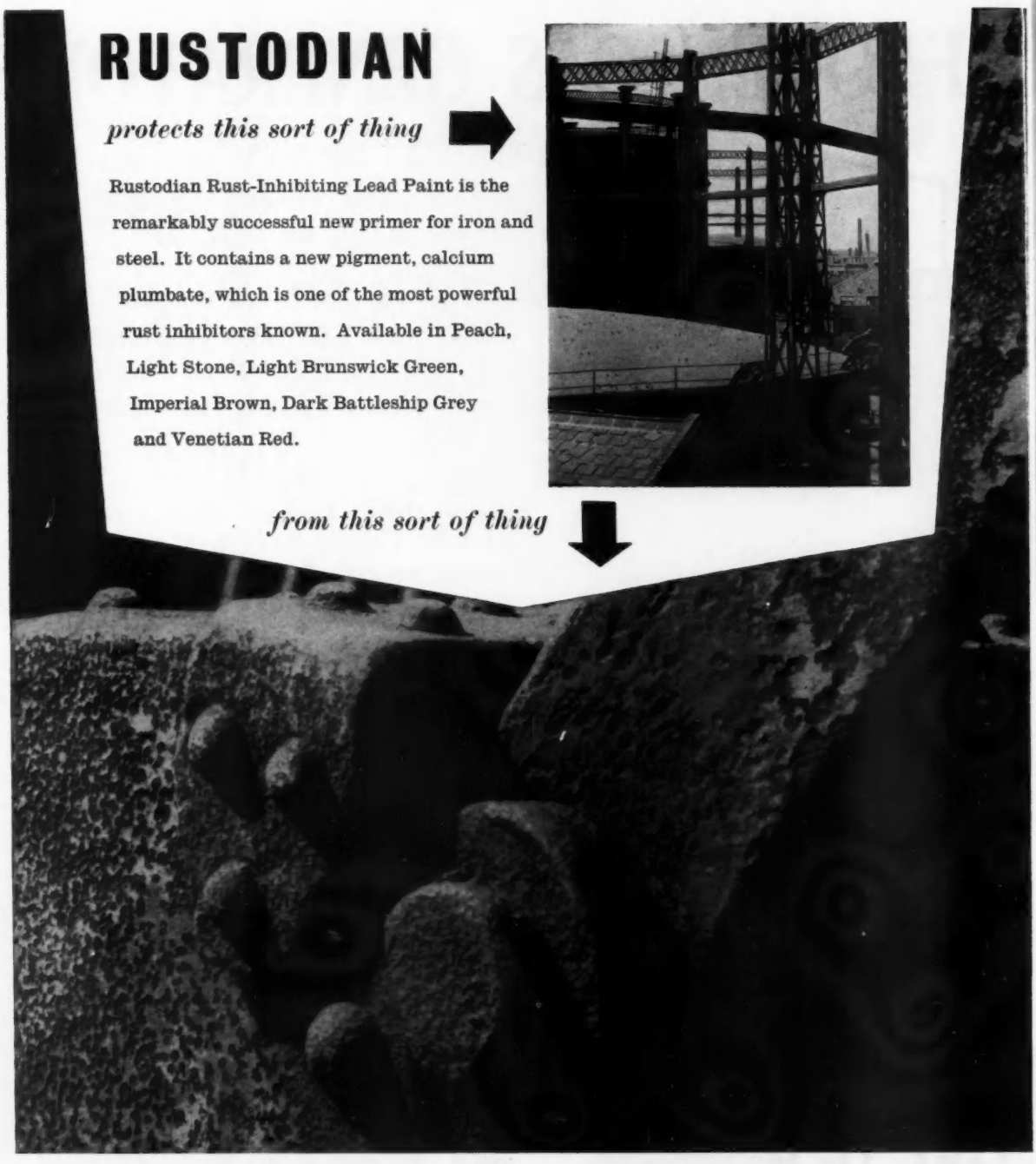

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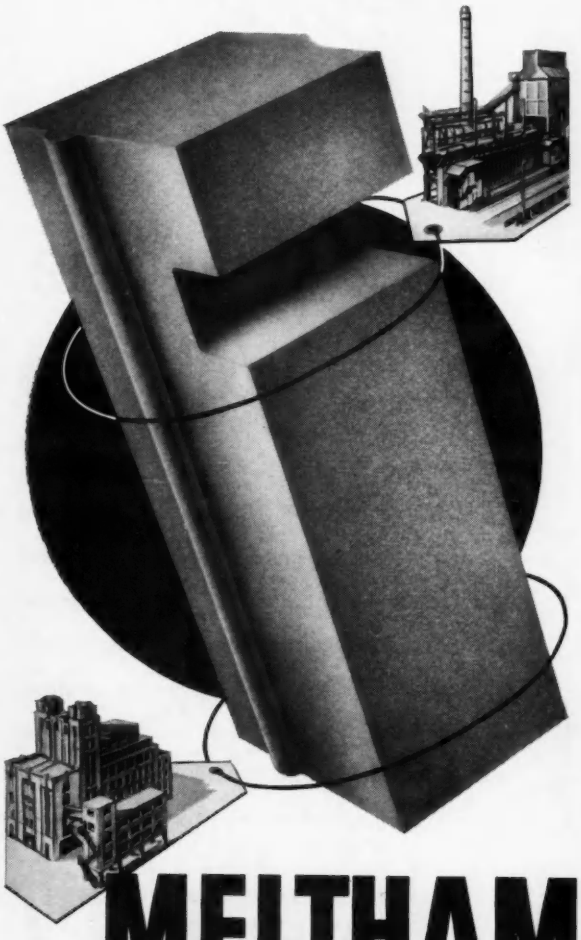

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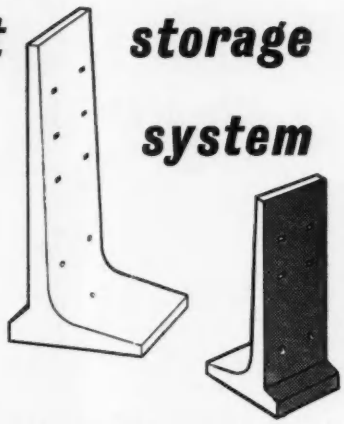

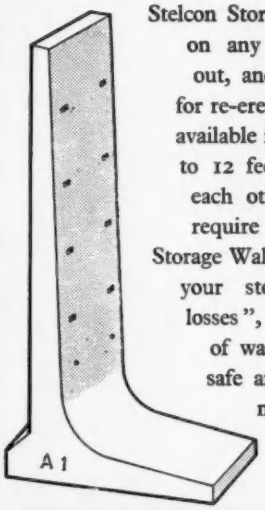

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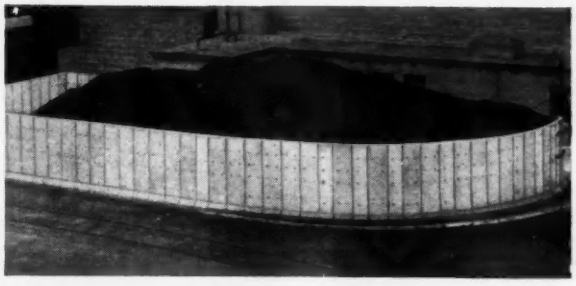

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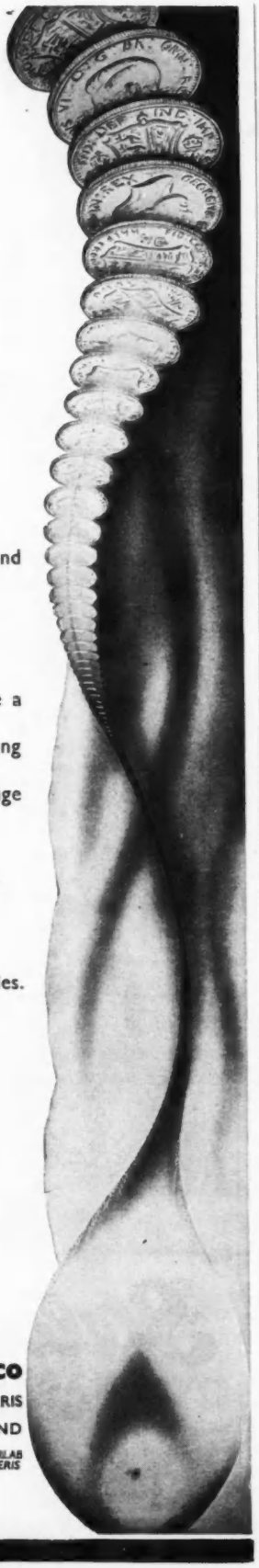

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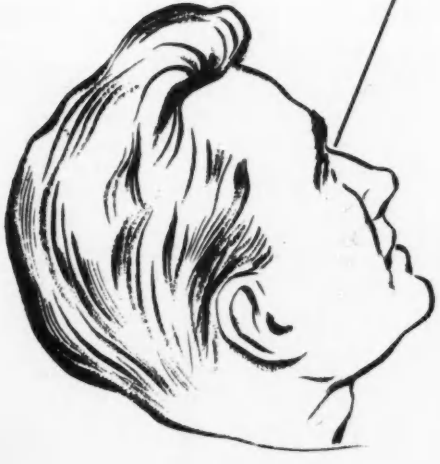

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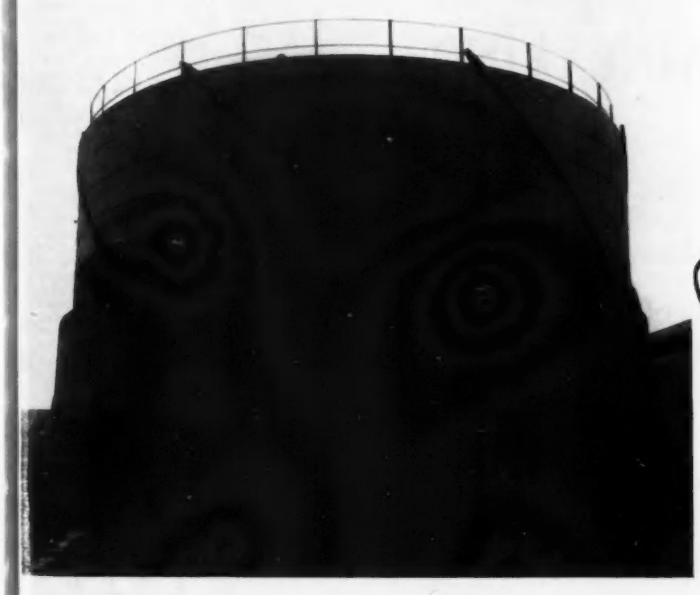

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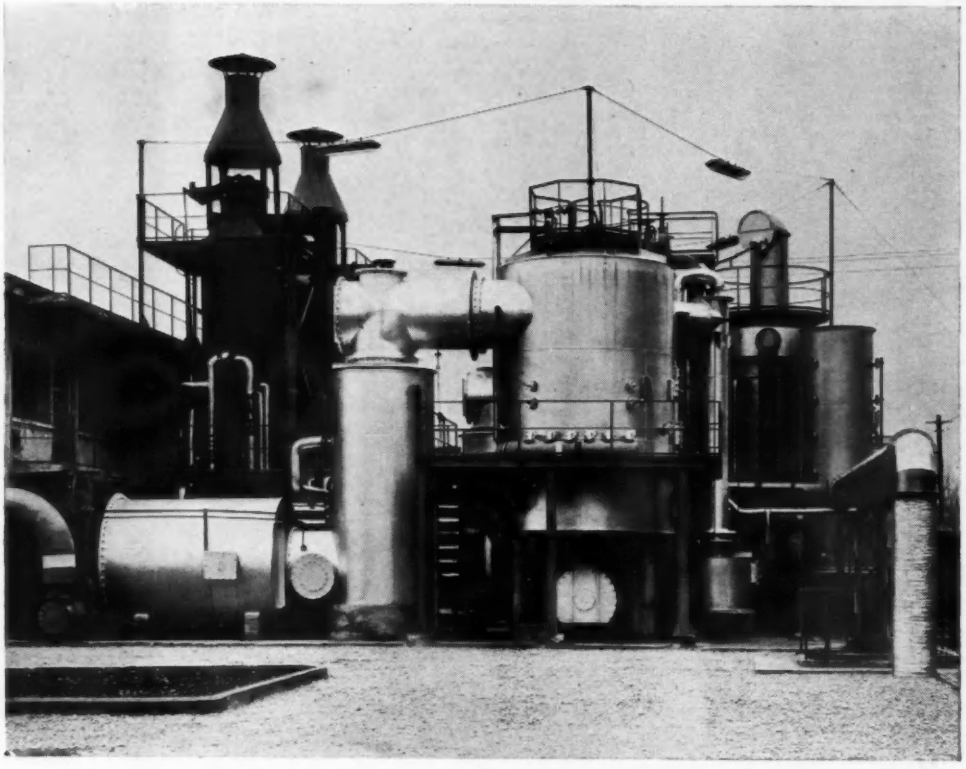

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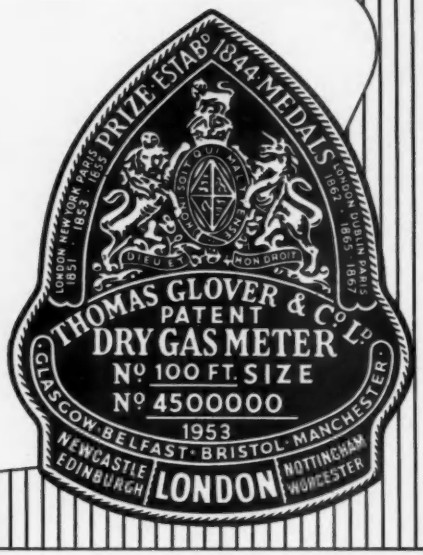

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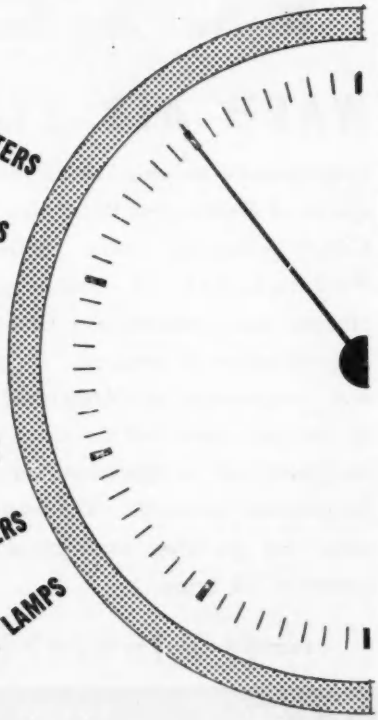

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Gas Journal

VOL. 279. No. 4753 106TH YEAR July 7, 1954

INDUSTRIAL GAS

The introduction in the programme of the Bournemouth meeting of the Institution of Gas Engineers of a free discussion of the position of town gas as an industrial fuel was just another instance of the vigour and imagination which Mr. J. T. Haynes brought to his duties as President of the Institution. Industrial gas officers were brought face to face with industrial consumers and makers of industrial gas appliances. Mr. Roy Hayman quoted a statement that 'the number of industrial gas engineers and their assistants directly engaged in maintaining and extending the industrial gas load (some 25% of the total load) was only about 150.' Surely never was so much asked by the gas industry of so few.

The industrial gas engineer is expected to know all about the combustion characteristics and possibilities of the fuel he is selling. He should know nearly all about the parallel properties of the fuels, liquid, solid, and electrical, with which he is in competition. He is expected to know, or quickly to find out, the technique of the processes to which he is endeavouring to apply town gas as the source of heat. Prevailing problems are often solved only by sound knowledge of the process concerned. Hampered by a price per potential therm higher than any competitors except one it must be admitted that town gas has put up an astonishingly good fight. That it has been able to do so shows that the industrial gas engineer must have gone a long way in equipping himself with at least most of the knowledge which we have catalogued.

The achievement of the hottest furnace of its kind in the world, 'one exciting plant', like other recent achievements, 'would help to increase the prestige of the gas industry.' Temperatures of over 2,000°C. achieved by town gas would give it a little of the glamour associated with electricity. Such an achievement has definite advantages, particularly in ceramics, where it would be possible to complete the quartz conversions before use instead of having to complete them in use. But the more solid foundation for the success of town gas as an industrial fuel is the precision with which it can be controlled. Improvements in the quality of the product, the elimination of wasters, lower maintenance cost, increased output and a vastly increased thermal efficiency in some cases completely redress the balance between the high initial cost of the fuel and the final overall cost of the product.

There is no more spectacular instance of this than the gas-fired tunnel kiln when appropriately applied, as in the manufacture of pottery, in certain wholesale cooking processes and in several other directions. Here is a most elegant example of fuel economy. The goods conveyed counter-current to the air for combustion, through the combustion chamber, and to the products of combustion, are heated from cold, finally heat-treated and then cooled down, transferring their heat to the incoming air. In the pottery industry it would seem to be necessary only to remove the sulphur content of town gas, entirely obviating the need for saggers, to place it in an impregnable position, assuming of course that all the necessary precautions are taken to ensure effective insulation and automatic precision temperature control. Even without some of these ultimate refinements the progress of the gas fired tunnel kiln in the Potteries, rising in numbers from 66 in 1938 to 190 to date, has taxed to the limit the output of gas from the fine Etruria gasworks in Stoke-on-Trent. Surely there is some glamour here. It was good to learn that Mr. H. R. Hems is to join forces with Mr. J. E. Stanier in developing the tunnel kiln in the Potteries.

The criticisms of Mr. Neil Gardiner, Director of the great Reading biscuit company, will be read, no doubt, with the greatest care. It is indeed of the greatest importance that town gas should not be put forward in cases where it is not the correct solution of the problem. But even in space-heating there are cases where it does fill the bill, cases where cleanliness, convenience, automatic control, and space and labour saving, may again outweigh its higher cost per potential therm. Let us by all means put the case honestly before the consumer, but let us not neglect to point out advantages and amenities worth paying for. There were, he said, two problems; one to find out where gas should be used and the other to encourage the development of the best plant for these jobs. And both these problems are to fall upon the already heavily burdened shoulders of the industrial gas engineer, a heavy burden even when shared by the manufacturer of gas furnaces and appliances.

The contribution to the discussion by Mr. J. Fallon, of the Incandescent Heat Company, was an outstanding example of this helpful collaboration. His seven directions in which improvement can be sought and accelerated and his three examples of outstanding achievement will be carefully noted and recorded. We were particularly interested in his citation of the latest types of radiant jet tubes, examples of the application of which we have noted in recent French practice. This contribution should be compared with Mr. Hems' list of the problems to be solved in the development of the pottery kilns. His last note on the necessity for much more knowledge on the most efficient methods of combustion and heat transfer is specially significant. 'The position of town gas as a major fuel in the firing of pottery is established and assured' but there is still scope for investigation and improvement.

Two points emerge from this extremely valuable and effective discussion, one, that made by Dr. W. F. Coxon, that at least a few all round fuel technologists are required in the equipment of the gas industry, the other, made by Mr. Fallon, that in many important directions in the use of industrial gas Britain is still in the lead, but that we can afford neither the time nor the place for the timid approach. Much time might have been spent in this discussion in listing the several thousand industrial heating processes successfully and profitably serviced by town gas. The time was much better spent in an appraisal of the general principles upon which further success and future develoment can be securely based.

RATES CONTINUE TO RISE

Rates levied by local authorities in England and Wales for the municipal year 1954-55 show a continued upward trend, but the increase compared with the previous year is a little less steep than before. The ninth annual return of rates, and rates levied per head of population, published by the Institute of Municipal Treasurers and Accountants, shows that the average for county boroughs exceeds the previous year by 5d. in the pound (against an increase of 1s. 9d. last year); for Metropolitan boroughs the rise was 3d. in the pound against 3s.; for non-county boroughs 6d. against 2s. 3d., and for urban districts 7d. against 2s. 3d. The return, which is published at 6s. per copy, post free, follows substantially the form of previous tabulations, which have included the data formerly given in the separate returns prepared by the Borough Treasurers of Preston and Chesterfield. Before the gas industry was nationalised, the returns gave, in the case of local authorities operating gas undertakings, interesting statistics showing the extent to which the rates benefited from gas profits or bore the burdens of gas losses. In the latest return, only the county boroughs section has a column for 'contributions from trading undertakings'; such contributions in the Metropolitan boroughs and county districts are merged into 'other credits.' Eastbourne and Bournemouth continue to enjoy the lowest rates in the country—15s.—and Merthyr Tydfil is still the only county borough to levy a rate of more than 30s., its rate having risen this year to 31s. 6d. Turning to the section giving rates expressed as amounts per head of population, however, the tabulation is very different. In fact, the positions of Eastbourne and Merthyr Tydfil are almost exactly reversed, Eastbourne having the highest county borough figure of 251s. 9d., and Merthyr Tydfil one of the lowest at 129s. For the first time the return includes rural districts, among which we find Eton has the highest rate per head (251s. 9d.) and Boston the lowest (74s. 5d.).

GAS AND THE WASHING MACHINE

No gas load is more likely to undergo violent changes during the next year or two than that produced by the washing machine and wash boiler. Washing machines with electrically-driven agitators are assuming an increasing important place in the housewife's affections. They are genuinely labour-saving; they have snob value; and they are getting cheaper. More important, most manufacturers (with the notable, but surely only temporary, exception of Hoovers) have produced machines with a built-in heating unit. Most of these are heated electrically, and for this reason the gas-heated type has assumed a new importance in the eyes of the gas industry—those that are open, that is. Unfortunately it does not seem to be generally appreciated that the very real possibilities of the two-fuel appliance must be explored quickly and thoroughly if we are to have a share of this rapidly expanding business. The phrase 'gas-electric' as applied to washing machines is now frowned on since it is puzzling and misleading for the consumer, but the 'electric washing machine *with gas heating*' makes everything clear. So for that matter does the July issue of 'GAS SERVICE' which devotes its first leader to the subject, as well as including an enlightening article by L. F. Skinner called 'Two Fuels—One Appliance'. This is probably the most detailed and informative article on this type of appliance ever published, at least in this country, and is recommended to sales staff who do not yet know all the answers. And incidentally, the gas salesman of the future will have really to know some of the facts of life about home laundry if this class of business is to develop.

SCIENTISTS IN THE CIVIL SERVICE

Excerpt from *Government and Parliament*, Herbert Morrison, p. 329. 'In our Civil Service all sorts of scientists are employed, some permanently and some temporarily. The idea that they are all men with long hair and shuffling feet incapable of understanding the practical affairs of the everyday world is wrong. Many of them are at work on very practical matters. Even those who are in the field of fundamental or natural science rather than applied science can sometimes, because of their trained and acute minds, assist in breaking down the elements of a problem of organisation and administration. So it was that scientists from the universities and from industry came to be used on a substantial scale in the two world wars, and they made a valued contribution to the scientific aspects of warlike operation and invention.' Qui s'excuse s'accuse.

OLD HOUSES . . . NEW LIFE

The Government's housing drive has now extended to embrace older property which is fundamentally sound but requires substantial repairs or conversion. For this type ing improved can qualify for a grant up to £400. Every dwelling produced by a conversion scheme can earn a grant of the same amount, so that a large house converted into three flats can get three grants. With characteristic imagination the Minister of Housing, Mr. Harold Macmillan, has demonstrated the possibilities of conversion by having built in Holles Street, off Oxford Street, a replica of part of an early 19th century terrace in St. Pancras. The houses have been built in the West End to show local authorities, house owners, builders, and the general public how by intelligent conversion and modernisation new life can be given to our older houses. The first house is typical of many before conversion, but the middle two houses have been converted horizontally into three self-

contained flats—on the ground, first, and second floors. It is claimed that the cost of this conversion, if done in London, would be in the region of £785 per flat, less in the Provinces, and of course the Government grant would go a long way towards meeting this expenditure. The skill with which Ealing Studios have recreated the old house in its original state—gas mantles (actually electric light bulbs), cobwebs, and all—must be seen to be believed and the details of the conversion, furnishings, etc., are sensible and tasteful. In fact the whole exhibit is one of the best things of its kind ever done in this country and it deserves wide attention. Always quick to seize their opportunities, the Coal Utilisation Council have an effective display of modern fires and stoves, with the emphasis on multi-duty equipment.

NORTH WESTERN UPS AND DOWNS

We must wait some time yet for the fifth annual reports of the Gas Council and the area boards which, in any case, must according to Parliamentary rules, be placed before Parliament before they are generally released, some of the boards have so far completed their records as to be able to give some sort of preview of results and we are beginning to get a statistical picture of what happened in the fifth year of nationalisation. For instance, the North Western Gas Board, in its *Quarterly Bulletin*, discloses that gas sales during the year ended March 31, 1954 amounted to 337 mill. therms, a fall of 0.5% compared with the total of 338.8 mill. therms sold in 1952/3. The largest reduction in sales occurred among domestic consumers, where sales were down by over 4 mill. therms. Commercial and other sales were down by about 2 mill. therms. These decreases were partly offset by a rise of nearly 5 mill. therms in industrial sales. A total of 4,057,000 tons of coal was carbonised in the Board's works. Compared with the previous year's figure of 4,326,000 tons this represents a fall of about 6.2%. Some 80,241 mill. cu.ft. of gas were produced, and 1,932 mill. cu.ft. were bought from outside sources, making a total of 82,173 mill. cu.ft. available for sale. Percentage changes compared with the previous year were −0.9% in the volume of gas produced; −10% in gas purchased, and −1.1% in total gas available. Coke production amounted to 1,806,000 tons (7.2% less than in the previous year). Water gas production and other works uses took 248,000 tons (6% more than last year) leaving 1,558,000 tons available for sale; a decrease of 9% compared with 1952/3. Among appliances the main increase was in sales of water heaters which were freed from hire purchase restrictions in August, 1953. A total of 21,900 water heating appliances, valued at £485,000 was sold during the year compared with 6,800 appliances (£162,000) in 1952/3. Cooker sales at £3 mill., compared with £2.8 mill. last year, showed the next largest increase in value, but the number of cookers sold was 2% less than in 1952-3.

The 1955 British Instrument Industries Exhibition will be open from June 28 to July 9 at Earls Court. Details of the programme have not yet been announced, but it is known that despite the comparatively small size of the British instrument industries this Exhibition attracts buyers from all parts of the world and makes a valuable contribution to the export trade. The Exhibition will cover all spheres of instrumentation in pure and applied science. It will embrace temperature, pressure and flow controllers; navigation equipment, medical instruments: industrial photography and all instruments used in scientific research.

OBITUARY

S. G. WATSON

We regret to announce the death in the Surbiton Royal Hospital on June 29, of MR. SIDNEY GRANGE WATSON, Director of B.H.D. Engineers, Ltd., and W. C. Holmes and Co., Ltd., and Manager of the London Office of W. C. Holmes at 119, Victoria Street. He was born in Bridlington on April 13, 1899, and went to Bridlington School. He joined the Services in 1916 and was engaged with the R.F.C. during the latter part of the war. He also spent some time in the Army of Occupation, chiefly in the neighbourhood of the Rhine.

On being demobilised, he took a course in Gas and Fuel Engineering at the University of Leeds under Professor Cobb. He graduated with the degree of M.SC. in 1925, largely as a result of an investigation prompted by W. C. Holmes and Co., Ltd., on the catalytic purification of gas. On the completion of this work, he joined the staff of the Company as a junior technical assistant.

His connection with the Company was a uniformly successful one, and when he took charge of the London office, he also assumed the greater share of the work in connection with Continental sales. This continued until Mr. R. J. S. Thompson was attached to the Paris Office of Appareils et Procédés Holmes in all technical matters. Mr. Watson was frequently appointed to represent W. C. Holmes and Co., Ltd., on various public bodies and committees, and this, combined with his social activities, brought him a very wide circle of friends and acquaintances. During recent years he contracted trouble with the heart, and in spite of slowing down of activity and periods of rest, little improvement resulted. About three weeks ago he suffered a cerebral hæmorrhage and the final cause of death was bronchial pneumonia.

CHARLES COOPER writes: Sidney Watson and I were only roughly contemporary in the firm of Holmes. He was one of a group of demobilised men who took special courses at Leeds to equip them for entering the industry, and who since remained close friends. These friends will miss him very much. When our firm required a junior assistant for a special investigation, Sidney Watson was recommended by a browwrinkled but inwardly appreciative Hodsman. Later, while I was on a long visit to North America, he came permanently on the staff, and it was between us a perennial joke that I had to be got out of the country before he could obtain a job. After this we jointly conducted many raids into the country of accepted practice in the gas industry, and perhaps his most notable testimonial would be the first set of tower purifiers at Wandsworth in 1938. He was in general a conformer to the conventions of the London business community, but with private reservations of a Northerly character. I arranged on several occasions some quiet holidays in the Lake Country, the Borders and dales, without wives; and it was his custom to express doubts as to there being 'any future in this kind of thing' (fell-walking), while enjoying it to the full and looking forward to the next time out. Salute to a good comrade.

NORMAN S. SMITH writes: Sidney Watson and I were among a small band of ex-Service men who entered the Department of Coal Gas and Fuel Industries at Leeds after the first world war to read for a degree fitting them in some measure to be of use to the gas industry or other basic industries allied to it. A lasting friendship developed between us; and it says something that we never quarrelled over the 'Bone and Wheeler,' in spite of being cooped together in wholly inadequate laboratory space. Following his graduation Watson took the path of research into the removal of hydrogen sulphide from gas, and after taking in his stride the degree of M.SC. joined the staff of W. C. Holmes and Co., Ltd. Our spheres were different, but our interests and our energies were directed to the same industry, and up to the time of his death we met frequently. All those meetings, whether on business or on pleasure bent, I recollect with happiness. Sidney Watson died at a comparatively early age. During his lifetime, however, he had put in a vast amount of highly useful work and had exercised his talents to the benefit of the gas industry and to the keen, if unspoken, appreciation of a great number of friends and business acquaintances.

MR. VINCENT DOWNHAM, representative of the Economic Boiler Co., Ltd., Burnley, died at his home in Burnley on June 28. Mr. Downham, who was 68 years of age, joined the firm in 1926 soon after its formation. As a representative in the North East for 28 years, he was well known in the gas industry.

EDITOR, 'GAS JOURNAL'

We are pleased to announce that Mr. TREVOR G. WILLIAMS, A.M.I.MECH.E., ASSOC.INST.GAS E., M.INST.F., has been appointed Editor of the 'GAS JOURNAL' with effect from October 1, 1954. On that date, Mr. CLIFFORD A. KING will relinquish the special duties of the Editor's chair, but will continue to devote full time to the management and promotion of the 'JOURNAL' and associated papers.

T. G. WILLIAMS

Trevor Gage Williams was born in December, 1917, near Bridgend in South Wales, but spent most of his early years at Harrow in Middlesex. He was educated at the Harrow County School for Boys from 1928 to 1933, and in later

years continued his studies at Acton Technical College and Battersea Polytechnic, eventually qualifying as a chartered mechanical engineer and fuel technologist.

Mr. Williams first became interested in the gas industry through his uncle, the late Mr. Henry Gage, M.INST.GAS E., formerly Engineer and Manager of Sutton (Surrey) gasworks and later Distribution Superintendent of the Wandsworth and District Gas Company. In 1933, Mr. Williams joined the Wandsworth Company as a pupil under articles to the Chief Engineer and Joint Managing Director of that Company, the late Colonel Cyril M. Croft, M.I.C.E., M.INST.GAS E. For three years he received, at the Wandsworth Works, a thorough grounding in the fundamentals of gas and mechanical engineering.

Upon completion of his articles, in 1936, there ensued a period of five years as an Engineering Draughtsman in the main drawing office of the same company; this time being spent in the design of the ancillary plant and structures normally required on a large works in connection with gas production.

From 1941 to 1944 he was engaged as Technical Assistant at Wandsworth, gaining general experience in the operation of the various types of plant used in the manufacture and purification of coal gas and carburetted water gas and in the production and treatment of coke and other by-products. During the final three years of his service with the Company, he held the position of Senior Technical Assistant, and was responsible, among other things, for the development of the use of instrumentation in the control of works processes and for the design of new official testing stations and recording calorimeter rooms incorporating a number of novel features in air-conditioning and automatic control.

From its formation to 'stand-down' he was a member of the Home Guard in the recent war, being on the strength of the 52nd County of London Battalion which was drawn from the staff of the Wandsworth Gas Company.

In 1947, with a view to gaining wider experience, he left the supply side of the industry and transferred his allegiance to the gas appliance manufacturers. He joined Ascot Gas Water Heaters, Ltd., as Senior Development Engineer at their Neasden factory at a time when this firm was particularly busy with its post-war programme for the development of new water heaters and other gas appliances. Among the projects on which he had responsibility were the 'balanced-flue' gas water heater and the '503' range of sink water heaters, all of which are now in production. He also undertook a number of investigations into the development of appliances for use with butane and natural gas, particularly for the overseas markets of the Ascot Company.

Three and a half years ago Mr. Williams accepted the post of Associate Editor of *Coke and Gas*, a monthly technical journal of the carbonising industries, which journal is owned and published by Tothill Press, Ltd. In the work of editing this, he has been associated with Dr. G. E. Foxwell, the well-known fuel consultant, and in the course of his duties has already become a familiar figure to a great many of our own readers.

He is an Associate Member of the Institution of Mechanical Engineers, an Associate of the Institution of Gas Engineers, and a Member of the Institute of Fuel. His hobbies include lawn tennis, gardening, and music.

SIR PERCY H. MILLS, BART., K.B.E., has been re-appointed Chairman of the National Research Development Corporation, and the membership of PROFESSOR P. M. S. BLACKETT, F.R.S., M.A., SIR JOHN DUNCANSON, and SIR EDWARD DE STEIN has been renewed. SIR HENRY HINCHCLIFFE, D.L., J.P., and SIR ALAN SAUNDERS, O.B.E., have been appointed in place of the retiring members, SIR EDWARD HODGSON, K.B.E., C.B., and MR. W. E. P. JOHNSON, A.F.C., A.F.R.AC.S., C.P.A.

MR. A. H. MORLAND, F.C.A., Chief Accountant of the South Western Gas Board, has been appointed Secretary and Accountant to the Board, with effect from July 1. Other Board appointments taking effect at the same time are: MR. G. H. PALMER, A.C.A., who is at present Deputy Accountant (Administration), to become Deputy Secretary; MR. J. HOLTBY, A.C.A., Deputy Accountant (Accounts); and MR. G. SHERLOCK, F.A.C.A., Deputy Accountant (Mechanisation).

MR. C. A. NEWHAM, Group General Manager, Bradford, North Eastern Gas Board, is a member of the Leeds Astronomical Society and was one of a party of members of the British Astrological Association who flew beyond the Shetlands last week to observe the eclipse of the sun.

Personal

MR. NORMAN M. MISCHLER has been appointed to the Board of Burts & Harvey, Ltd., Chemical and Tarmacadam Manufacturers, Totton, Southampton.

MR. F. BEAUMONT, Local Manager at Mablethorpe, has been appointed to the position of Engineer of No. 6 District of the Sheffield Division of the East Midlands Gas Board.

MR. EDWARD B. CLEGG has been appointed by Kirkham, Hulett & Chandler, Ltd., as Engineer Representative for the areas of the North Western and North Eastern Gas Boards.

MR. J. MURRAY GRAMMER has been elected the Chairman of the London Branch of the Purchasing Officers' Association. This is the largest of the Association's 43 branches and has 800 members. Mr. Murray Grammer, who is a Barrister-at-Law, is the Stores Buyer for the North Thames Gas Board.

DR. J. M. S. RISK, Chief Accountant of the Southern Gas Board, left the gas industry on June 30 to take up a position with the Brush Group, Ltd., as Controller of Accounts, and a Director of British Oil Engines, Ltd. Dr. Risk presented a paper on 'Appreciation of Factors Affecting Costs in the Gas Industry' at the recent Bournemouth meeting of the Institution of Gas Engineers, of which we shall be publishing an abstract, together with a report of the discussion, in an early issue of the 'JOURNAL.'

MR. HOWARD C. HITCHCOCK, B.SC., well known in tar distilling circles in the south of England, has been appointed to the Board of Burt, Boulton and Haywood, Ltd. He joined the staff in 1920 as a chemist in the Prince Regent Tar Distilleries, and was appointed works manager at Silvertown in 1938, a position he held until his appointment to the Board of the Prince Regent Tar Co., Ltd., in 1951. He is a member of the Council of the British Road Tar Association, a Director of P.R. Chemicals, Ltd., the Silvertown Tarmacadam Co., Ltd., and Home Counties Tarmacadam Contracting Co., Ltd.

MR. G. H. KENYON, Group Manager, Medway Group, who had been at the head office of the South Eastern Gas Board on a temporary basis, has been appointed Deputy Personnel Manager to the Board. MR. D. L. WOODMAN, who had been combining the duties of Production Control Officer to the Board and Acting Senior Personnel Officer to the Metropolitan Division, has been appointed Senior Personnel Officer. MR. H. N. WHYTE has been appointed Station Engineer, Dover; MR. D. F. CLAYTON is now Engineering Assistant to the Divisional Engineer of the Rochester Division; MR. J. E. STEEL assumed the post of Assistant to the Area Distributing Engineer. In the East Surrey Division, the following appointments now apply: MR. I. M. WILSON, Deputy Station Engineer, Waddon Works; MR. R. L. NORTON, Station Engineer, to both the Redhill and Horley works; MR. A. G. SKINNER, Station Engineer, Dorking.

In our report of the Mechanical Handling Exhibition we wrote of the '*Safelex*' system of track electrification by Geo. W. King, Ltd. The correct title is 'Safelec.'

M. André Renaldon, a frequent visitor to England, relaxes with two colleagues.

ASSOCIATION TECHNIQUE de l'Industrie du GAZ en FRANCE

The 71st Conference of the Association was held in Paris from June 21 to 24. The general meeting of the Association was held on the 22nd under the Presidency of M. M. Ferlet who was supported on the platform by members of the Council, M. Le Guellec, Chairman of the Administrative Council of Gaz de France; M. Combet, Directeur Général, and M. Mougin, Inspecteur Général, Gaz de France; M. Brabant, Immediate Past-President of the International Gas Union; M. R. de Brouwer, President, Association Royale des Gaziers Belges; and Mr. W. K. Tate, President, Institution of Gas Engineers.

The President extended a welcome to the representatives from foreign countries who, in addition to those already mentioned, included seven from Germany, one from Austria, five from Belgium, one from Denmark, three from Spain, one from Italy, four from Holland, one from Great Britain, one from the Saar and two from Switzerland. The President also heartily welcomed five young German gas engineers who were attending the meeting at the invitation of the Association. Dr. Gummert, President of the Arbeitsgemeinschaft des Deutschen Gasfachs, had suggested the procedure of exchange and five young engineers from France had recently attended the German Congress in Hamburg. The selected students were those who had obtained 'honourable mention' in the 1952-53 session of the Centre d'Etudes Supérieures Gazières. The President expressed to Dr. Gummert his appreciation of this proposal and hoped that the experiment was one which could be repeated in future years.

He also spoke in appreciative terms of the arrangements that had been made by the Institution of Gas Engineers and his British colleagues for the works study visit to London in May, 1954. This visit formed part of the 1953-54 session and had been extremely successful. He assured the representatives of The Institution of Gas Engineers, Mr. Tate and Mr. Higgins, that his Association would be happy to reciprocate by making similar arrangements for younger members of the Institution to visit installations in France.

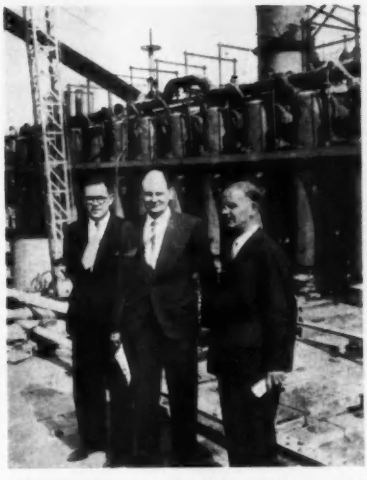
The report of the Council was then considered. The President referred to the increasing importance in the affairs of the gas industry of its engineers and technicians. He expressed appreciation of the fact that the Association had been asked by Gaz de France and by the Minister of Industry and Commerce to undertake special investigations into various subjects—including, for example, optimum calorific value and the examination and verification of calorimeters and governors. The Association continued to play an important part in the work of the International Gas Union in connection with which at the forthcoming Congress in New York two technical reports and three papers were to be presented by members. He also referred to a number of other French scientific organisations with which the Association has been collaborating during the year in connection with various studies. He expressed his appreciation of the assistance he had received from the Chairman of the various Committees, who reported individually on the year's work.

A special tribute was paid to one of the Honorary Members of the Association, M. Etienne Audibert, an Honorary President of Charbonnages de France, who had recently died. The President recalled his great services to the coal and gas industries.

M. Bolzinger then presented the report of the committee dealing with manufacture, which included reference to conditions of contract for the provision of dry gasholders which had been submitted to the manufacturers for their observations; the relining of retorts; the chemical purification of gas; the possible applications of the gas turbine in the gas industry, etc.

The report of the committee on distribution was presented by its Chairman, M. Grene, who stated that the committee had devoted its attention to four principal items—the examination of new techniques, standardisation, the establishment of conditions of contract, and the continuation of the preparation of a handbook for the transport and distribution of gas.

The report of the committee on utilisation was presented by M. Coudeville, and that on coke, tar, benzole and derivatives by M. Nerot. Matters studied by the latter committee included the debenzolisation of gas, the discharge of effluents from gasworks, measures taken to reduce pollution of the atmosphere by fumes, odours and dust; the evaluation of sulphur in purifying materials and a rational and methodical procedure for coke breaking.



Mr. W. K. Tate, President I.G.E., with (left) Mr. A. G. Higgins, Assistant Secretary I.G.E., and (right) Mr. Schenker, Neuchatel, who officially represented the Swiss Association.

The section of the report dealing with training and education and with technical literature was presented by M. Queret. He referred to the 16th session of the Centre d'Etudes Supérieures Gazières in connection with which 29 applications had been submitted and 24 had been accepted. The course had included a works tour in Northern France and in London, to which reference had already been made by the President. Of the 24 students, 21 had been granted certificates, three had been given honourable mentions and two distinctions. He referred also to the commercial course conducted in March which 350 salesmen had attended. He reported the considerable increase—from 177 to 193

Below—an aerial view of the Alfortville Coke Ovens.

Inspection at Alfortville.

—of technical journals which the Association now regularly received. The total included 74 foreign periodicals from 18 countries.

There followed the presentation of prizes for the best papers presented at the 1953 Conference. A prize of Fr. 50,000 was awarded to M. Metenier, one of Fr. 40,000 to M. Semery and one of Fr. 40,000 to M. Vdovenko. A medal was presented to M. Gustave Davoust in recognition of his 50 years membership of the Association. The morning session terminated with a report of the activities of the Society for the Development of the French Gas Industry in which a film illustrating the baking of biscuits by gas was shown; and in the afternoon there was a paper by M. Robert André, on 'The Coal-Oil Problem and its Effect on the Gas Industry.'

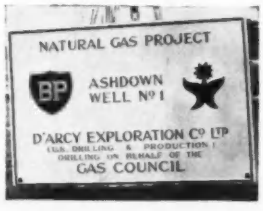
The rest of the business sessions on Wednesday and Thursday mornings and all day Friday were devoted to the discussion of 32 technical communications. The usual procedure was for the author very briefly, in a matter of one or two minutes, to outline the salient portions of his paper, which was taken as read, and discussion was then spontaneous from the various parts of the hall; the author endeavouring to reply forthwith to the questions. Occasionally, no introduction was offered by the author, and discussion commenced immediately. Some of the papers evoked a considerable and very interesting discussion, while others which were largely descriptions of particular experiments or pieces of plant were less contentious. The field covered by the technical papers was extremely wide, including methods of analysis of coal; fundamental aspects of fluidisation; methods of improving coke quality; the cracking of paraffin distillates in Woodall-Duckham retorts; researches on the principle of dry purification; practical tests on an oil deduster at the gas receiving station of Bourges; the production of coal tars of low water content; the production of strong ammoniacal liquors by modification of the purification plant at the Nanterre works; the industrial use of infra-red radiation; the painting of gasholders, etc.

Works visits were conducted on the afternoons of Wednesday and Thursday, the delegates being split into two parties, one visiting on the first day the coke oven plant now under construction at Alfortville and the other the Renault Motor Works at Flins-sur-Seine; on the Thursday these visits were reversed.

During the Friday session an address was given by the Chairman of the Administrative Council of Gaz de France, M. Le Guellec, who referred to the important work of the Association Technique and of the International Gas Union.

On the social side, in addition to an excellent programme for the ladies, a dinner was given by the President and Council of the Association to the foreign delegates in the beautiful building of the Cercle Interallié, at which the President, on behalf of the Association, and M. Combet, Directeur Général of Gaz de France, welcomed the guests from other countries. M. Brabant replied on behalf of the guests. On Thursday a very pleasant reception and dance was held at the Cité Universitaire.

The 32 papers presented are listed on p.54 of this issue. They will be reviewed in future issues. Meanwhile we are asked to announce that sets of the papers are available on loan from the library of the Institution of Gas Engineers.



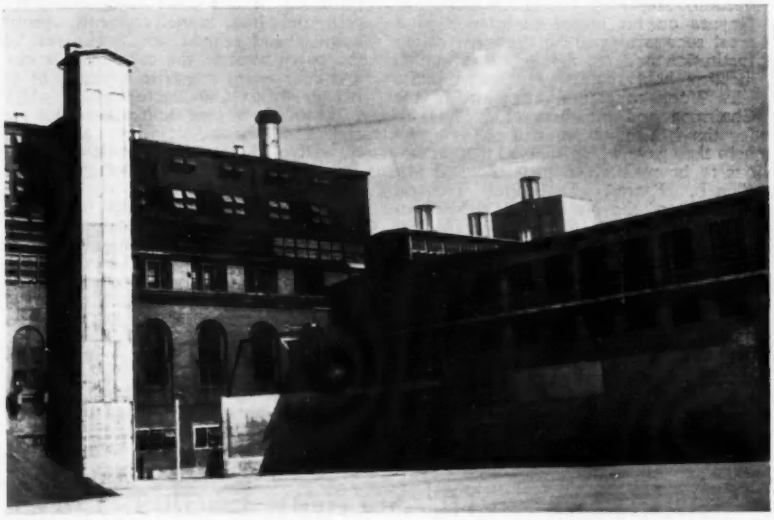
These pictures illustrate the articles on pp. 902 and 904 of last week's 'Gas Journal.' On the right are shown the team at work coupling up and the site chemist testing in the mobile laboratory. Below, Sir Harold Smith and Mr. J. McV. Luard, Exploration Manager of the D'Arcy Company, discuss a sample of our earliest earth. Bottom right is a general view of the well-head gear.

DANISH GAS ASSOCIATION

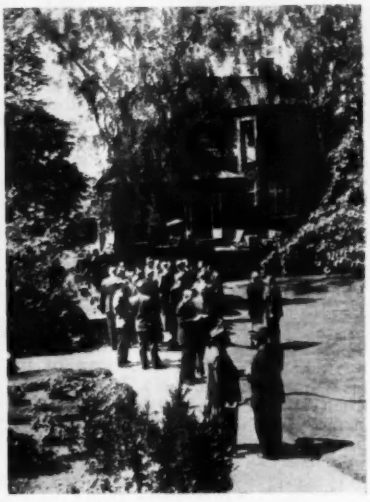
Under the presidency of Mr. CH. KROMANN, Engineer and Manager of the Strandvejs Undertaking, the annual general meeting of the Danish Gas Association was opened in Copenhagen on Tuesday, May 25, by a welcome from the President to the foreign representatives. It was noteworthy that the President greeted the seven of them each in his own language.

The Medical Officers of the Local Authorities are apparently pressing for a reduction in the CO content in order to reduce gassing fatalities. Experience in other countries was asked for, because obviously any severe restriction would seriously affect the cost of gas manufacture in Denmark.

On the second day there was a visit to inspect new plant which had been erected on the Strandvejs Gas Works on the outskirts of Copenhagen, where a modern installation of Woodall-Duckham vertical retorts, together with washing plant, purifiers, etc., has been installed. Following the visit to the works, there was a further discussion on the sales side of the industry.



The retort house at the Strandvejs Gasworks on the outskirts of Copenhagen.



A garden party for the delegates.

The Conference took the form of discussing the reports of various committees of the Association covering the whole of the industry's activities, and there were no set papers. There was an interesting discussion on the subject of the percentage of carbon monoxide which should be permitted in town gas.

Diary

July 7.—LONDON AND COUNTIES COKE SALES CIRCLE: All-day visit to Reading Gasworks, with choice of subsequent visits to (a) Huntley & Palmer's Biscuit Factory, or (b) Robert Cort & Son's Foundry.

July 8-17.—LAUNDRY, DRY CLEANING AND ALLIED TRADES' EXHIBITION, Olympia. Gas Council Exhibit.

July 9.—SOUTH WESTERN G.C.C.: 34, Bridge Street, Taunton, 11.30 a.m.

July 19.—EASTERN G.C.C.: Connaught Rooms, Great Queen Street, Kingsway, W.C.2.

July 19.—WEST MIDLANDS G.C.C.: Dudley Room, Queen's Hotel, Birmingham, 2.15 p.m.

July 23.—NORTHERN JUNIORS: Visit to the Laboratories and Works of Robert Bowron & Co., Ltd., Pelaw, 2.15 p.m.

July 29.—NORTH THAMES G.C.C.: Westminster City Hall, Charing Cross Road, London, W.C.2.

The Coal Utilisation Council and the Combustion Engineering Association have published the proceedings of their joint conference on smoke reduction in the City of London (solid and liquid fuels) held at the Mansion House in March last. The joint conference office is at 6, Duke Street, St. James's, London, S.W.1.

Calendar & Directory

ALTERATIONS

THE following changes have been notified during the past month. To keep the information in the current 1954 edition of the GAS JOURNAL CALENDAR AND DIRECTORY up to date readers are invited to note these alterations (together with the appropriate adjustments relating thereto in the 'Personnel' section of the DIRECTORY, pp. 138-150).

Page 21.—MINISTRY OF FUEL AND POWER: Owen Francis, *Under Secretary*, Gas Division, vice K. L. Stock; delete Sir Harold Roxbee Cox, *Chief Scientist*, resigned.
Page 22.—SOUTHERN G.C.C.: Mrs. A. E. M. Oliver, M.B.E., *Deputy Chairman*, retired.
Page 37.—BEDFORD GROUP AND BEDFORD: Amend T/N to read 66381.
Page 46.—HUDDERSFIELD-HALIFAX: Delete H. Singleton, *E. & M.*, retired.
Page 53.—NORTH THAMES GAS BOARD: A. D. L. Copp, *Distributing E.*, vice H. J. Escreet, retired (with effect from August 3).
Page 54.—NINE ELMS: C. C. Cunnold, *Station E.*, vice W. E. Davies, retired.
Page 109.—ABERGAVENNY: Delete A. D. Howells, *E. & M.*, deceased.
Page 117.—WEST MIDLANDS GAS BOARD: Delete F. H. Cureton, *Secretary*, to retire shortly.
Page 163.—BARBADOS GAS COMPANY: Delete D. R. Young, *M.*, resigned H. Sisnett, acting temporary *M.*
Page 174.—LONDON AND SOUTHERN: E. O. Rose, *Chairman;* A. Tran, *Senior Vice-Chairman;* J. M. Webber, *Junior Vice-Chairman.*
Page 176.—EASTERN: W. A. Evetts *Chairman;* J. H. Greenacre, *Senior Vice-Chairman;* R. C. Wardell, *Junior Vice-Chairman.*
Page 177.—MANCHESTER: H. Johnston, O.B.E., *Chairman*, W. S. Hubbard, *Senior Vice-Chairman.*
Page 178.—MIDLAND: C. C. Wood, *Chairman;* J. Corrigan, *Vice-Chairman;* D. K. Green (Coventry), *Hon. Sec.*
Page 179.—NORTH OF ENGLAND: W. R. Garrett, *Chairman;* W. Sutcliffe, *Senior Vice-Chairman;* J. T. Cleator, *Junior Vice-Chairman.*
Page 186.—SOCIETY OF BRITISH GAS INDUSTRIES: Sir Ernest Smith, C.B.E., *President*, vice Sir Geoffrey Shakespeare; J. Simpson, *Chairman of Council*, vice Colonel W. R. Glover, C.M.G., D.S.O.

Institution of Gas Engineers

Midland Section Summer Meeting

It was dull but dry when members of the Midland Section of the Institution of Gas Engineers visited the Basford gasworks, Nottingham, their first port of call for their Summer Meeting, held on June 25. The Basford works covers a site of about 22 acres, and adjacent to the works is a coal and coke stocking ground of approximately 10 acres. Thirty thousand tons of coal and 15,000 tons of coke can be stored on the site. The nominal gas making capacity is 14 mill. cu.ft. per day, consisting of 10 mill. cu.ft. of coal gas from continuous vertical retorts and 4 mill. cu.ft. of water gas from carburetted water gas plants.

While the members were inspecting the works with an appreciative eye, their wives were at the Parliament Street demonstration theatre and showrooms for coffee, before visiting the Nottingham shopping centre, where their eyes were equally appreciative of what they saw there. All were welcomed to luncheon by Mr. C. C. Wood, Chairman of the Section, and his wife, Mr. Sydney Smith, Chairman of the East Midlands Gas Board, and the Lord Mayor of Nottingham, Councillor Sidney Hobson, who were also accompanied by their wives.

A City of Antiquity

MR. SYDNEY SMITH, proposing the toast of the City of Nottingham, traced the history of the city, which he said was 'steeped in antiquity and tradition.' He spoke of the cleanliness of the city and particularly of the Clifton Estate, a smokeless zone, where there are some 2,400 houses. Each house is fitted with a gas cooker, gas washboiler and coke burning grate, in most cases gas ignited. Sir Hugh Beaver and the members of his Government Committee on Air Pollution had visited the estate, and had spoken to many of the tenants, who were enthusiastic in their praise of living in a smokeless zone. Mr. Smith concluded by paying tribute to the excellent relations that existed between the City Council and the Gas Board, especially in the settling of the problems concerning the vesting of assets, under the provisions of the Gas Act.

The LORD MAYOR OF NOTTINGHAM, replying, extended civic greetings to the gathering.

MR. A. ALLEN, Senior Vice-Chairman of the Association, before proposing the health of the East Midlands Gas Board, read apologies for absence and welcomed various guests and their wives. Among those present were Mr. E. H. Harman and Mr. W. R. Branson, Deputy Chairmen of the East and West Midlands Gas Boards, respectively, Alderman Frank Lee and Mr. R. M. Stevenson, members of the East Midlands Gas Board, Mr. A. Gwynne Davies, M.B.E., Secretary of the East Midlands Gas Board, and Mr. F. H. Cureton, Secretary of the West Midlands Gas Board. Mr. Allen said that in the East Midlands there was a wonderful team spirit and they had at headquarters a body of men with experience and wisdom of industrial life, who had done a first class job of work, one of the best in the country.

MR. SYDNEY SMITH briefly replied.

MR. J. T. HAYNES, proposing the toast of the Midland Section, apologised for the absence of the President of the Institution, Mr. W. K. Tate, who had only that day returned from Sweden. The Midland Section was fortunate in that its members came from three areas, the East and West Midlands, and Southern.

MR. C. C. WOOD, Chairman of the Section, replying, congratulated Mr. Haynes on his recent completion of a most successful year as President of the Institution and on the excellent annual meeting held recently at Bournemouth. Mr. Wood concluded by thanking the Chairmen and members of the Boards for the interest shown and the practical help they gave which enabled their activities to be maintained. He thanked Mr. K. L. Pearce, Divisional General Manager of the Notts and Derby Division, and Mr. J. S. Fox-Andrews, of Nottingham, and his staff; also Mr. Douglas Green, Hon. Secretary of the Section, who took office only a few weeks ago.

The Benevolent Fund collection taken during luncheon amounted to £13 6s.

Members went in the afternoon to the works of the Stanton Ironworks Co., Ltd. Some elected to go to the pipe works and at the 18 ft. spun plant they saw iron pipes of up to 24 in. diameter being produced by centrifugal methods. At the Dale spun plant spun pipes of 4 in. to 6 in. diameter are produced in 18 ft. lengths. The Erewash Foundry produces flexible joint components for cast iron pipes, tunnel segments, special castings and refined iron. The rest of the party went to the coke oven works. The coke ovens comprise a battery of 41 Becker ovens and the extension which will soon be in operation will double the output of the plant, which at present carbonises 1,000 tons of blended coal daily. Over 6 mill. cu.ft. of gas is supplied daily into the East Midland Gas Board's grid mains and this figure will rise to approximately 22 mill. cu.ft. per day when the extension is completed.

MR. WOOD, thanking Mr. Frederick Scopes, of the Stanton Company, for the hospitality, congratulated him on receiving a knighthood in the last Birthday Honours.

MR. SCOPES said that he was glad to see them all. His knighthood was a recognition of the Company and the industry with which he had been associated all his life.

South Western Section Ladies Day

Members of the South Western Section of the Institution of Gas Engineers and their ladies were favoured with ideal weather for their Summer Meeting and Ladies Day on June 30. It was the first gathering of the kind since the re-organisation of the South Western Gas Board area—in which all but a very small percentage of the members are engaged—involving the many changes and removals announced in the 'JOURNAL' of April 14, and it served as a pleasant opportunity to exchange removal and other experiences. The venue was the delightful city of Bath. Several members availed themselves of the invitation to look round the gasworks in Upper Bristol Road; others spent the morning looking round the lovely old city with its famous Roman baths and Pump Room, the Abbey, and the shops. They all assembled for luncheon, by invitation of the Chairman and members of the South Western Gas Board, at Fortt's Restaurant, where Mr. Charles R. Ingham, Chairman of the Section, presided.

Two Brief Speeches

Speeches were kept to a minimum. Mr. Ingham, who proposed the only toast—that of the guests—referred to the regretted absence of Mr. W. K. Tate, the new President of the Institution of Gas Engineers, and of Mr. C. H. Chester, Chairman of the South Western Gas Board. He warmly welcomed Mr. J. T. Haynes, Immediate Past President of the Institution, and Mrs. Haynes, and all the guests, particularly the ladies. 'Not only have we been nationalised,' he went on, 'but in the South West we have been re-organised. The re-organisation has been a big job, and I think it has been a necessary job. It is a very fine scheme, and the paper which our Chairman read at the Institution Meeting at Bournemouth a month ago was a remarkable paper which many of us will want to study most carefully.'

There was, continued Mr. Ingham, another side to the story which closely concerned the ladies. Many members had been concerned about what the re-organisation scheme was going to do for them. In many cases there was suspicion and heart-burning. Their womenfolk had upheld them in their anxieties, and looking round the present gathering he could see little if any sign of despondency. With re-organisation accomplished it was up to the members to go forward in the interests of the industry.

Mr. J. T. Haynes responded on behalf of all the guests and conveyed the greetings of the new President, Mr. Tate. Looking back over his own year of office he was proud of all that the Institution stood for. He assured the ladies that no matter what was the official title, position, or status of their husbands, when they came to meetings of the Institution and its sections they were on an equal footing with all their colleagues. He recently had the pleasure of attending a meeting of the Western Junior Gas Association, which served to recall the sense of pride experienced by every junior association when seniors found time to come and visit them. He hoped the Chairman of the South Western Section of the Institution would never lose sight of the desirability of encouraging the juniors in that way.

In the afternoon the party journeyed to Longleat House, near Frome, the stately seat of the Marquess of Bath, situated in delightful country. It is one of the most magnificent houses of its kind in England, and the tour of detailed inspection was the more enjoyable because of the excellence of the guides.

After looking round the house the members and guests were entertained to tea at the Bath Arms Hotel, Hornings-ham, just outside the grounds of Long-leat House. Although there were no formal speeches, thanks were expressed to the South Western Gas Board for hospitality, to the Chairman for presiding, and to the Hon. Secretary, Mr. E. V. Dunn, for carrying out the arrangements so successfully.

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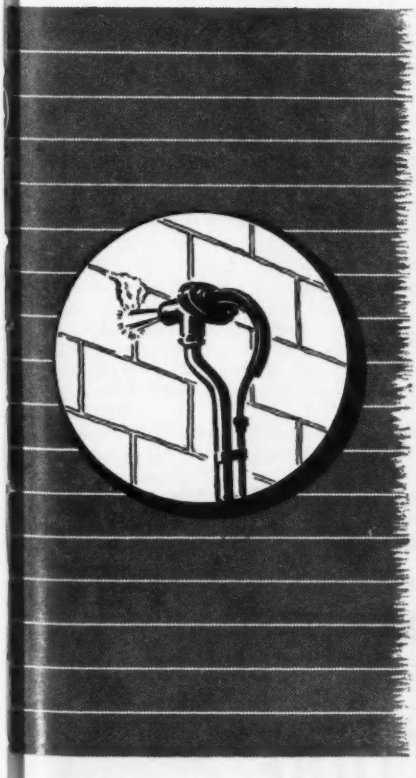

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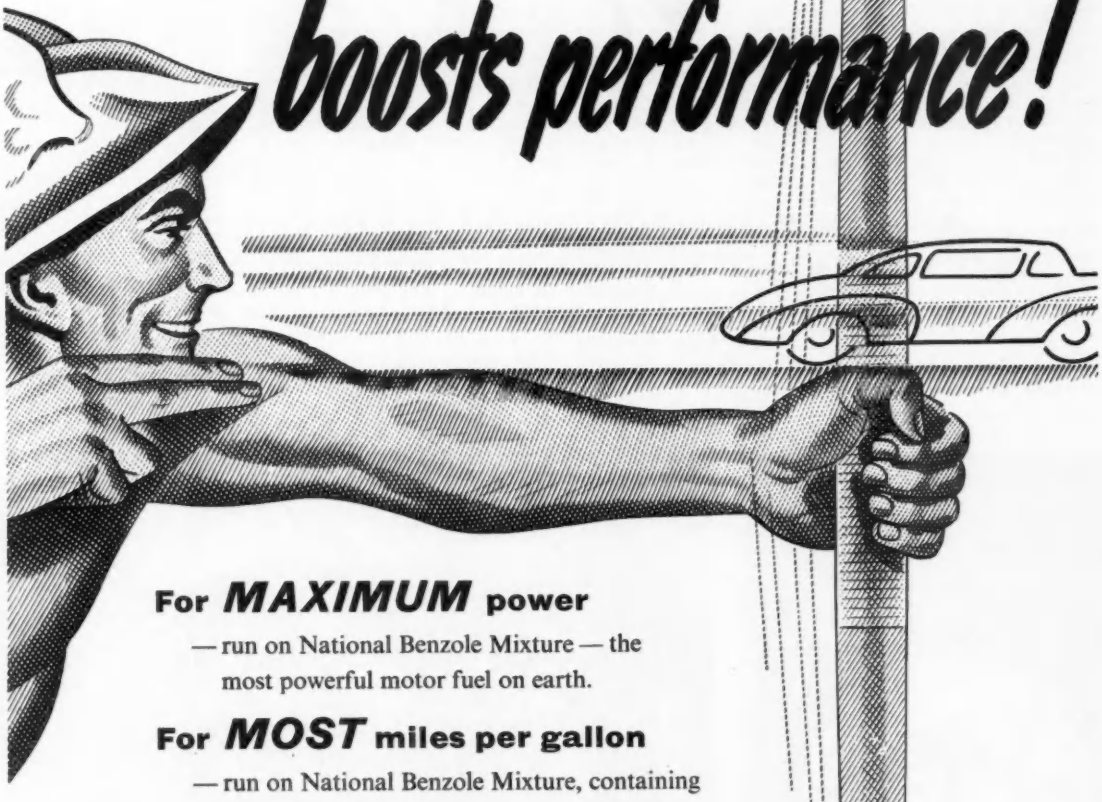

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CIVIL DEFENCE AND THE GAS INDUSTRY

FROM A PAPER PRESENTED TO THE INSTITUTION OF GAS ENGINEERS ON JUNE 1, 1954, BY

W. M. MARSHALL,

M.C., T.D., A.F.I.C.D., Civil Defence Officer, West Midlands Gas Board.

It is impossible to quote the lessons learned by each individual gas undertaking affected by air attack during the second world war. Endeavour has been made, therefore, to select certain lessons to which consideration might be given by those responsible for civil defence planning within the industry. In a nutshell, the object of the exercise is to devise ways and means of safeguarding gas supplies in the widest possible sense, by the protection of plant and personnel to minimise damage and casualties, and by the organisation of services necessary to restore a situation brought about as the result of enemy attack from the air.

The weight of attack to be anticipated in any future war is greatly in excess of anything previously experienced in the United Kingdom. It follows, therefore, that any plan to meet such attacks must be flexible and must allow for the rapid movement of mobile reserves to where they are required. To achieve this, a control system, with adequate communication facilities, is virtually essential. The emphasis at this juncture must be on communications. In any plan the system of communications, with due provision for alternatives, must be accorded high priority.

The control system itself must not be so large as to be cumbersome and uneconomic in man-power. Yet it must be adequate to deal with the heaviest calls likely to be made upon it. A system of reliefs is just as important as the initial manning strength of the control-room, and staff should be able to interchange duties if such a measure becomes necessary.

To ensure co-ordination, a short daily conference of senior operational personnel is well worth while. Such a conference, which need not be a drawn-out affair, already takes place in many industrial and commercial establishments to deal quickly with everyday affairs. It has the additional advantage that everyone knows what is happening and all can work accordingly. It was found by the senior officers of the Coventry gas undertaking, during early raids of the second world war, that distribution repair resources were being deployed to minor incidents when, in fact, they were more urgently required elsewhere.

To make any scheme work, there must be personnel to implement the planning. Good feeding arrangements play a vital part in keeping up strength and morale. Plans should, therefore, allow for emergency means of cooking and feeding.

Transport, like men, cannot work without fuel. On many occasions during the second world war, operations were held up on both sides because of lack of fuel. Reserve stocks are essential, as are also, for instance, means of drawing petrol from underground storage tanks when the usual pumps have been put out of action. Mechanical shovels, oxy-acetylene cutting apparatus, and other similar equipment will be invaluable in clearing debris obstruction.

There is no need to stress the importance of alternative electricity and water supplies for human consumption or for process work. On the first-aid side, it should be remembered that very many injuries sustained during the second world war were due to burns, and an adequate stock of burn dressings is, therefore, of value. It is suggested that civil defence first-aid should perhaps tend to concentrate on the treatment of burns and on crush injuries.

Operational Considerations

To produce town gas, a works needs certain basic essentials, *viz.*, plant and buildings, fuel in one form or another, water, transport facilities, man-power and means of disposal of waste or residual products. To safeguard all of these basic essentials is obviously impossible. The safeguarding of some of them is, indeed, not the direct responsibility of the industry, but something has to be done to try to lessen the effect of damage to a complete installation. If all gasworks were of standard size and were equipped with standard plant, no difficulty would arise in connection with the holding of spares. Since this is not the case, the best that can be done is to select certain items of plant, which, perhaps, may be regarded as being of greater importance than others in the manufacturing process. Even when the items have been selected by name, an additional complication is introduced into the national picture by varying capacities of the plant. Since economic considerations also influence the solution to this problem, an obvious answer is a national pool of spares. Now that the industry is nationalised, it has been found possible to compile a list of certain types and sizes of plant which could be held in reserve and which, generally speaking, could be satisfactorily put to work to meet emergency conditions.

Another consideration concerns the possible dislocation of the normal methods of disposing of coke, liquor, and tar. Where coke, for instance, is normally despatched in large quantities by rail, and the rail service is dislocated, could road transport be utilised in an emergency? Similar suggestions can be made relating to other waste products, bearing in mind it is better to have some sort of a plan in a drawer rather than a blank sheet of paper.

The hazard of fire is not an easy one to overcome. As one preliminary measure, the attention of the industry has very recently been drawn to the desirability of standardised fire hydrants on a national basis. What risks are, for example, associated with tar tanks and oil storage tanks? Bunding is, of course, one answer, but if tank and bund are breached, where are the fluid contents likely to run?

These are but a few of the questions that come to the mind of one who is not a gas engineer. Doubtless, there are others more intimately concerned with the actual process of manufacture and to which thought has to be given by the engineers themselves.

Local Conditions, Local Problems

Due functioning concerning distribution also poses problems. The insertion of valves and bagging-off points, the provision of spare pipes and specials and inter-connections between adjacent areas of supply are all recognised means of helping to safeguard the distribution of gas. Here again, however, one cannot be dogmatic in recommending a general panacea. Local conditions create local problems of their own, capable of solution only by those who know the immediate factors involved.

The duplication of mains drawings and plans by, for instance, a micro-firm process, and the storage of duplicates out of the target area is an additional safeguard. It is not sufficient to place full reliance on the memory of any one man as to where a certain valve is located without committing such information to paper. In the event, the man who knows may, in fact, be the man who knew.

Water can be a friend or an enemy when it finds its way into gas main. It can seal off a broken main and prevent an escape of gas, and can just as effectively seal off a main required to carry gas. Pumps, therefore, are essential in war-time as components of the distribution gang's repair kit.

In the event of atomic attack, underground mains and services may not be seriously affected. On the other hand, large quantities of gas are likely to be lost through broken house pipes in the devastated area. Two problems appear to emerge. Firstly, because of fires, débris and general damage, and assuming the works are undamaged, gas will

have to be cut off around the circumference of a circle with centre at ground zero and a radius of not less than 1 mile. Althogether, an immense problem in itself. Secondly, what steps could be taken to keep the mains charged? Would it be necessary, for instance, to deny gas supplies to consumers until the danger from air infiltration into the mains had been eradicated?

Shelter for Personnel

All basic civil defence teaching stresses the value of shelter, especially in atomic attack. The necessary standards of shelter have been agreed: 12 in. thickness for reinforced concrete, or its equivalent in other materials, for a general standard shelter, and 24 in. thickness of reinforced concrete, or its equivalent, for grade 'A' shelter suitable in atomic target areas.

Shelters may be planned, but not built. Yet, in many cases, because gasworks have been built up since 1945, space is at a premium and it is not so easy to find room where shelters may be constructed. Further, permission does not seem to be readily forthcoming for the inclusion of reinforced basements in new buildings which would appear to be one solution to the shelter problem. How does one reconcile these apparently conflicting views, especially when many people express the opinion that shelters are not only physical protection in themselves, but are also an outward and visible sign of preparedness, thereby contributing to the upkeep of public morale? Firstly, let it be remembered that war damage payments from 1941 until March, 1953, total £195,467,585. This vast amount of money obviously represents some building effort in repair and restoration. Secondly, many new houses, schools and industrial establishments have been and are being built and expanded to meet the country's needs. Resources in the way of money, materials and labour are not available to meet both development and shelter construction programmes, and the former must come first in the national interest. Nevertheless, as was stated earlier, paper planning of shelters may proceed.

Allied to the difficulty of lack of space on many works, there is the additional problem of pre-warning. Because of the increased speeds of aircraft, warning of impending attack is considerably reduced and is not expected to exceed 5 min. at the most. More than likely, it will be less. An ideal is to have shelter accessible in 1 min. from the warning. When people are already on the ground, shelter may be reached in 1 min., but what of employees engaged in some duty at the very top of a vertical retort house? Obviously they must be provided for, and thought may be directed to the possibility of providing shelter within a building by utilizing alternative materials to concrete; 7 in. thickness of steel, for example, is equivalent to 24 in. thickness of concrete in resisting the penetrating powers of the gamma flash. Whichever material is used, however, a new problem of floor loading is likely to be introduced.

One suggestion that may be worthy of further investigation is that shelters could be erected on coal storage sites with the coal itself as an additional thickness of protective material. Coal is not likely to be ignited by heat flash and would offer increased resistance to the gamma rays.

It is at least comforting to know that even the shelters of the last war, with suitable reinforcement, can afford protection against atomic attack, and it is reasonable to suppose that further information as to types and standards of shelter has been obtained from recent tests of atomic weapons.

Protection of Plant

The main object of protecting plant is to lessen the amount of damage likely to be sustained by the plant from blast, bomb splinters or débris. A table (top right) taken from Home Office sources, indicates the degree of protection required against blast and splinters of a 500 lb. high-explosive bomb bursting 50 ft. away.

Various types of blast walls were utilized for plant protection during the second world war. Sandbag walls were, in general, not satisfactory for a variety of reasons. The sandbags themselves were subject to rot and, unless treated by some form of preservative, rarely lasted for more than about 10 months. The bags themselves are easily punctured, either accidentally or by splinters, and they require constant checking. Considerable amounts of dust and dirt usually accompany sandbag walls, to the ultimate detriment of machinery and motors. Finally, to construct a really serviceable wall 8 ft. in height, 4 ft. thick at the base and tapering to 2 ft. at the top requires at least 40 bags and 1 ton of sand for every running foot. Such walls were eventually replaced by others consisting of sand-filled pre-cast hollow concrete blocks. The sandbag wall was of the non-rigid type, that is, the wall was made up of a number of individual components, each of which was independent of the others with no bonding or tying between them.

Degree of Protection Required to Withstand Effects of a 500 lb. High-explosive Bomb

	Thickness (in.)
LATERAL PROTECTION:	
Mild steel plate	1½
Reinforced concrete	12
Brickwork or masonry	13½
Unreinforced concrete	15
Ballast or broken stone	24
Earth or sand	30
Solidly stacked timber	36
OVERHEAD PROTECTION:	
Mild steel plate	5/16
Reinforced concrete	6
Efficient brick arching	9
Earth, sand or ballast	18
The inside of an existing building having a roof and not less than two floors overhead, provided that the floor above the protected space is designed to support the debris load.	

A rigid blast wall is one in which all the component parts are bonded together. Typical of these rigid walls are those built of brick or concrete to the specifications laid down. The effect of blast on a non-rigid wall is, in most cases, to cause it to collapse, whereas rigid walls do tend to contain blast to a larger degree. Although this may reduce the area over which blast may be felt, heavy damage might occur in the contained area because of the pressures built up.

The use of a blast wall integrated with a building structure is not recommended, since there is a tendency for the building itself to be damaged by blast whilst the wall remains undamaged. Probably, the most effective blast wall is one that may be called non-rigid and non-integrated. Usually, such protection is constructed as a brick wall built without mortar. The main advantage of these "dry walls" is their elasticity.

The use of pre-cast concrete blast walls in various shapes was adopted both in this country and in Germany, the cross-section being either an inverted 'V' or inverted 'T' in shape.

Since the majority of plant is likely to be protected by blast walls of one form, or another, the following brief summary of the main advantages and disadvantages is also given.

Type of Blast Wall	Advantages	Disadvantages
Rigid	High resistance to blast and disintegration.	Lack of elasticity and mobility.
Integrated	High resistance to blast.	Difficult to repair.
Non-integrated	Easily re-sited and repaired. Units can be pre-cast.	Heavy blast causes the wall to shift or collapse.
Non-rigid, non-integrated.	Easily constructed, re-sited and repaired. Elastic and absorbs shock.	Component members might act as missiles.

Repair Organisation

Gas undertakings invariably have a complement of maintenance staff varying from perhaps one or two handymen, in the case of very small works, to fully equipped machine, fitting and carpenters' shops all with their skilled tradesmen and assistants at the other end of the scale. Within divisions of area boards, it should not be particularly difficult to raise works repair gangs from divisional resources, which could be available as mobile reserves or reinforcements in case of emergency. Since it is not desirable to strip any one undertaking, for reinforcement purposes, of all its skilled tradesmen at any one time, the suggestion is made that each undertaking within a division should con-

Horizontal Carbonising Plant

Our illustration shows eighteen beds of ten 24" x 18" through Horizontal Retorts, including the extensions of five beds shown in the foreground, recently completed, with Congdon Standpipe System and Coal Handling Plant, etc. The existing thirteen beds have also been converted to the Congdon System.

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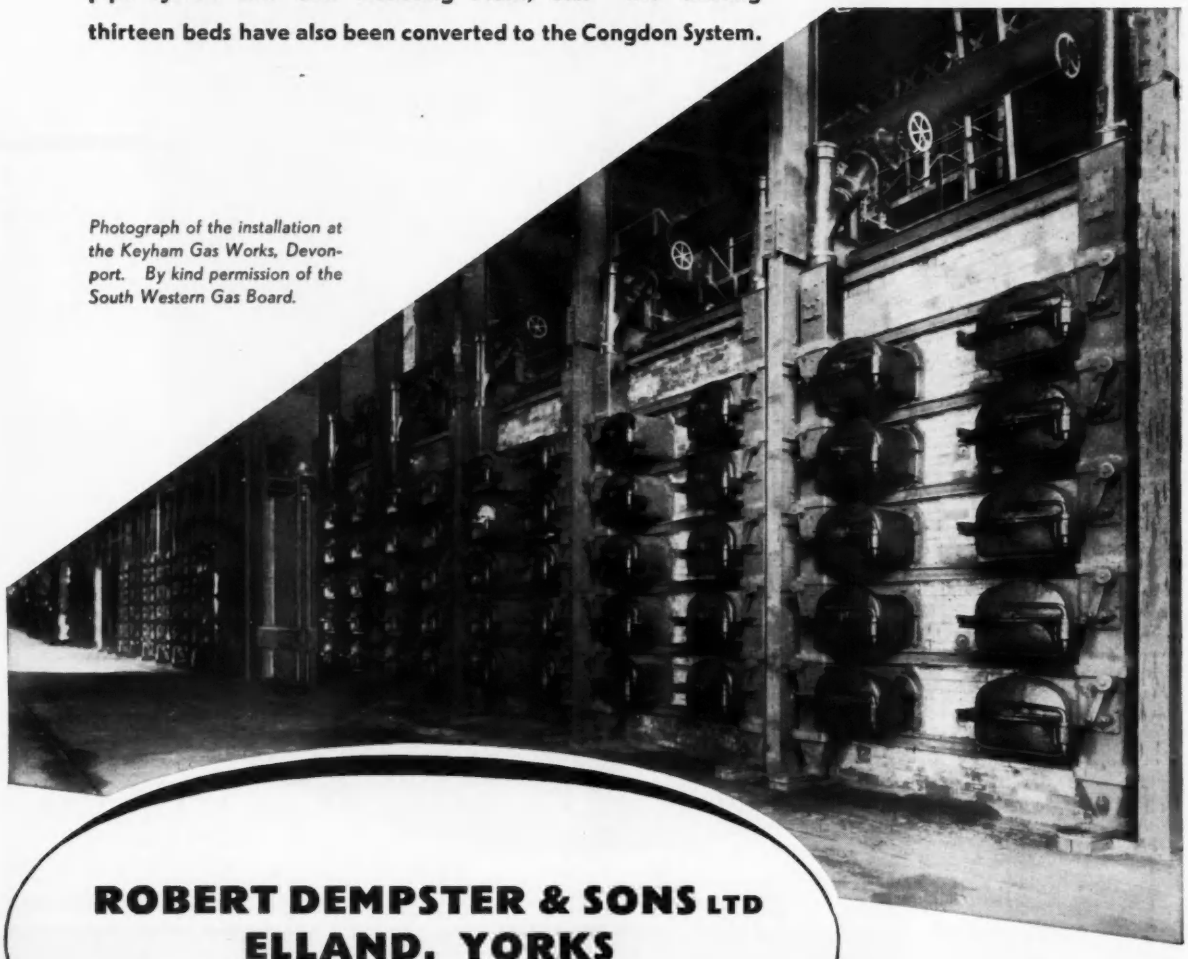

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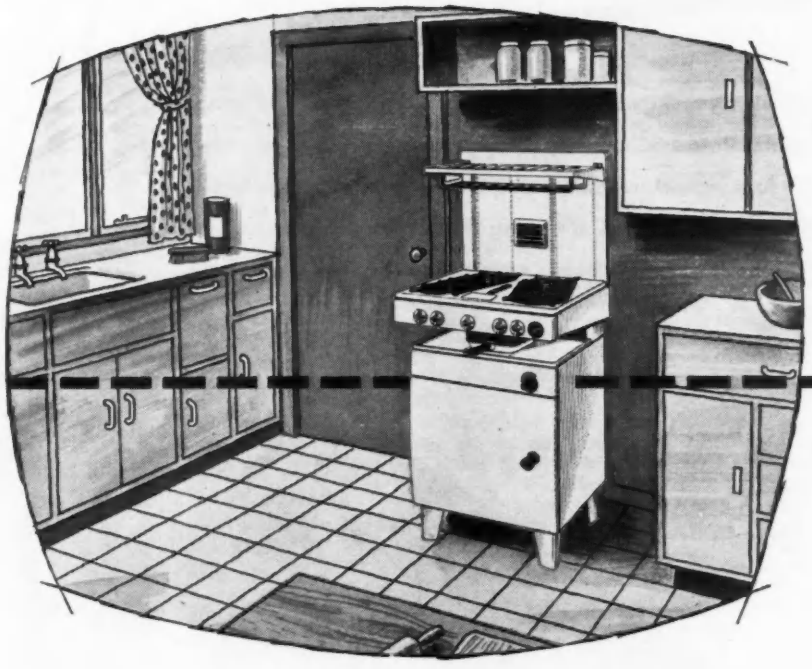

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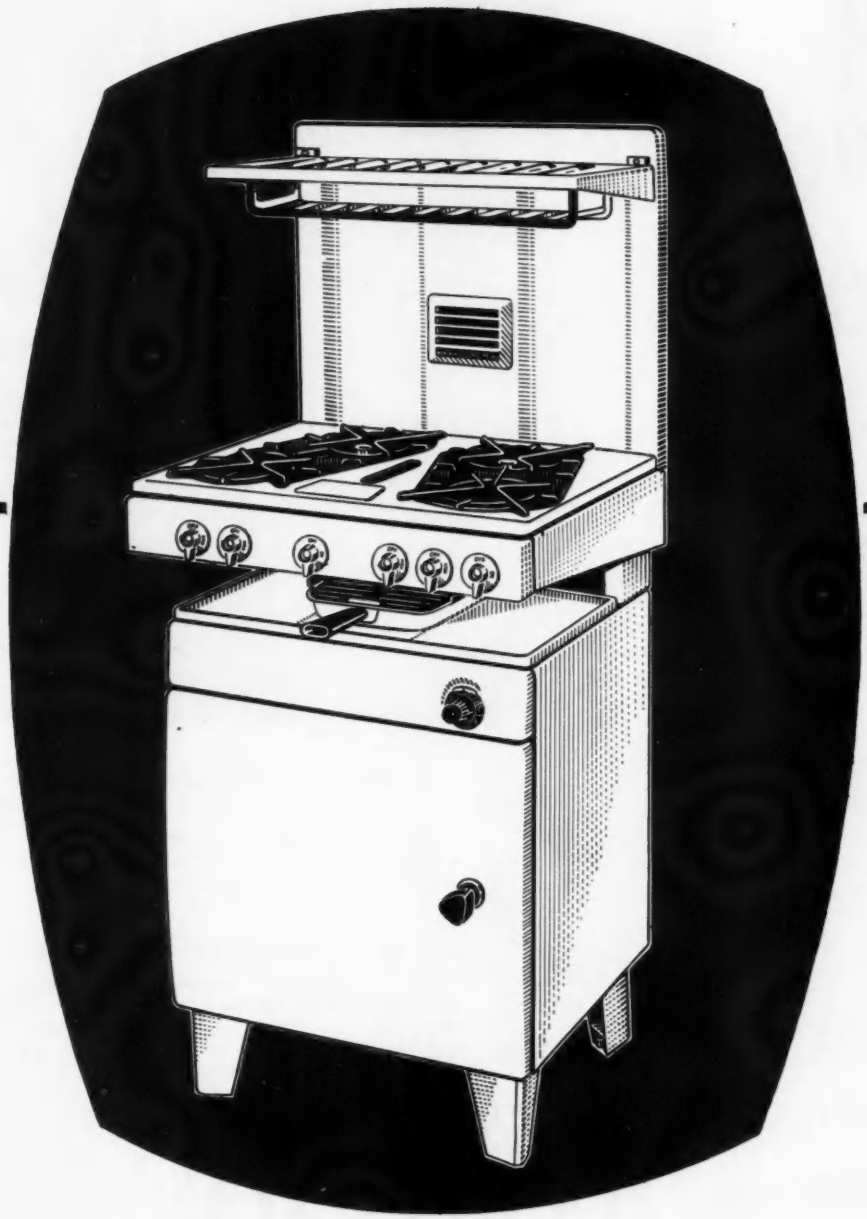

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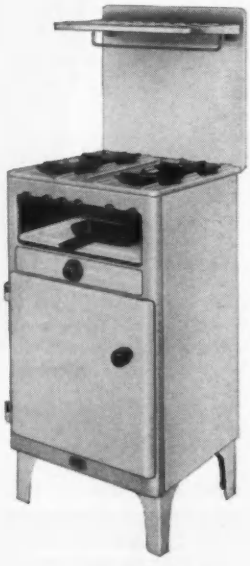

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tribute in some way to the establishment of the gang. The final determination of the gang cannot, it is thought, be reached until the extent and nature of the damage to be repaired is known. A divisional register of skilled tradesmen and mobile equipment could be of great value in deciding from which undertaking the component parts of a gang should be called. Such a gang need not necessarily be at immediate call, but would be at comparatively short notice and, on being called out, could meet either at a predetermined rendezvous or be collected by lorry, according to circumstances.

Such gangs could well compose the first line of an emergency works repair service within a board's internal organisation. They could be reinforced, if necessary, by teams from other area boards, by the services of specialist contractors to the gas industry, and by the works and buildings emergency organisation.

Mobile resources already exist for mains repair work and for consumer service and are already virtually at immediate call. In war time and under operational conditions, it would not appear difficult to transfer these forces to where they were required with the minimum of delay.

Civil Defence

The gas industry in its normal course is already equipped in peace time to deal with most emergencies likely to arise. In other words, it has to be prepared to deal with breakdown at the works, or escapes from mains services or fittings on the district. The application of civil defence to the gas industry may, therefore, be regarded as an extension of normal safeguarding practice, with particular emphasis on additional hazards likely to be encountered in war time. If, therefore, some knowledge of these war time risks can be imparted to employees who are already familiar with the various aspects of the industry, a major step forward will have been taken concerning overall due functioning measures.

The industry already has a chain of control upon which the civil defence system can easily be superimposed without undue dislocation. Normally, a gas undertaking is not blessed with a superabundance of staff, and it is conceivable that, in war time, there can seldom be a complete civil defence unit in addition to those employees required for due functioning. There should be little difficulty with regard to control, first-aid, fire fighting and an effective warden organisation, but it is doubtful if full civil defence rescue teams will always be available from works manpower. Consideration can, however, be given to the formation of 'utility' teams, who should be taught the basic principles of first-aid and rescue procedure. To reinforce this skeleton rescue squad, recourse would have to be made either to industrial group or local authority resources. The preliminaries and implications can be decided as a result of discussion between the local engineer an his local authority civil defence officer. Provided that the latter is made aware of the problems peculiar to a gasworks, there can be little doubt as to the full co-operation and assistance that would be forthcoming in time of need.

Control of a gas undertaking in war time means not only day-to-day control of the normal processes and functions, but also the control of an undertaking's civil defence scheme and all that it involves when enemy action takes place. Control must be flexible and capable of adapting itself to field conditions in the shortest possible time. It is one thing to keep a tight rein on an undertaking from a well-organised office in peace time, but it is an entirely different matter trying to maintain control when the normal system has completely broken down and the office consists of improvised shelter, without adequate furnishings.

Exercises are invaluable for bringing to light points that can so easily be overlooked in moments of stress. It is of no use whatsoever having a scheme on paper unless some attempt has been made to ensure that it is, in fact, practicable

Liaison with other Services

Liaison with Government departments, the local authority and other utility services can be discussed under two main headings—training and operations. Direct contact with the Regional Civil Defence Office of the Home Department has been, and indeed still is of great value in obtaining an overall picture so far as policy is concerned throughout the region.

For detailed training, involving the use of equipment and other facilities not normally available to industry, a satisfactory working arrangement with the local authority civil defence officer concerned is invariably the rule. At this level an effort should be made to ensure that a representative of the local gas undertaking, and one who is preferably an instructor, is introduced to the local authority civil defence officer so that contact on the training side is made and maintained. There are certain aids to training, chiefly relating to atomic warfare, which are only just becoming available to industry. No difficulty has been experienced in arranging for the loan of such equipment, together with the use of fire huts, static or mobile gas chambers, rescue vehicles and training grounds necessary to implement a training programme.

Close co-operation with other utilities, the police and fire services and local industrial establishments, is of inestimable value in all matters relating to training and it has been found possible to produce combined exercises and studies for the benefit of all taking part.

As well as taking advantage of facilities offered by the local authority, the West Midlands Gas Board has, in many instances, been able to assist in the building up of background information for high level study exercises and for headquarters and warden section training of the local civil defence corps division. In the latter case, talks to personnel of these units not only make them aware of the organisation of the gas industry, both national and local, but also help them to assess problems peculiar to the industry and methods adopted to deal with certain types of emergencies. The publicity value of these talks alone is surely a consideration at the present time.

Operational liaison necessitates an extensive background knowledge of the national civil defence organisation as well as of the industry. In the succeeding paragraphs, endeavour has been made to indicate briefly some of this background within the area of the West Midlands Gas Board. The principles, of course, are equally applicable in other areas.

Government Departments

The regional office of the Home Office will, in time of war, be responsible for the establishment of a regional war room for the overall co-ordination and control of all civil defence activities within the region. Under the direction of the Regional Commissioner, or his representative, reinforcements will be deployed and a programme prepared for the post-raid restoration of damage. It is inevitable that damage to property means damage to gas-manufacturing stations and/or distributing systems, with consequent repercussions on the supply of gas. Since gas is used for industrial and domestic purposes, and its cessation would affect both production and morale, it is, therefore, imperative that the Regional Commissioner be aware of the gas supply position throughout his region. It is likely that a representative from the board will be required to attend at Regional Commissioners' conferences to put the board's case and to assist in the determination of the necessary priorities for repairs and labour. Needless to say, the board's representative should have a considerable degree of authority and, in the case of the West Midlands Gas Board, it is probable that the Chairman himself would attend these conferences.

A liaison officer between board headquarters and the regional war room would keep two-way information up-to-date.

Since the Ministry of Fuel and Power is the sponsoring department for the gas industry, again it is essential that the local office be kept fully advised of all developments. In many parts of the country, local offices of the Ministry have called together representatives of the fuel and power industries and, indirectly, other utilities to ensure the co-ordination of effort. It is considered that, for example, the electricity industry has many problems similar to those of the gas industry, so far as civil defence is concerned, and much can be learned from the inter-change of ideas, both from the training and operational aspects.

The Ministry of Supply is, to a large extent, responsible for guidance in connection with the due functioning of

industry other than that which has been nationalised. It is, among other things, concerned with the setting up of a self-help scheme, mainly to expedite post-raid restoration of production. Under a regional self-help committee, a number of panels are set up, each consisting of representatives of important war factories prepared to help each other with such labour, materials, plant and other facilities as they may have available. The panels, in turn, plan their local schemes. Although not directly concerned, the West Midlands Gas Board has placed the services of its industrial department at the disposal of the local regional committee because it is felt that the department may be able to offer advice and assistance in the installation of producers for alternative gas supplies.

The main reason for liaison with the Ministry of Works relates to assistance which might be given to the gas industry in post-raid restoration by the works and buildings emergency organisation. This organisation consists mainly of building and civil engineering contractors who, in war time, would pool their resources of man-power, material and plant to expedite a programme of repairs initiated by the Regional Commissioner.

Local Authorities

Irrespective of the overall pattern of the regional civil defence plan, it is imperative that the closest contact be maintained between a gas undertaking and the local authority, or authorities, to which gas is supplied.

The co-ordination of all civil defence matters within its area is one of the local authority's prime responsibilities. Further, in war time, it is more than likely that information relating to incidents on the district will be first reported to the gas undertaking through civil defence channels of communication. One undertaking might perhaps supply as many as four or five local authority areas, and liaison with each has to be established. Conversely, one local authority area might be supplied by more than one undertaking, and, again, all-round co-ordination is necessary.

Where a civil defence operational group has been created by the regional office of the Home Department, it is thought desirable that one liaison officer from the industry should be in a position to represent and speak for all the gas undertakings supplying that operational group and he should work with the group controller in solving the local problems. It might well be that the liaison officer would represent not only undertakings within his own board's area of supply, but also undertakings within the territory of other area boards. In the area of the West Midlands Gas Board, district engineers and managers, particularly in the important target areas, have been encouraged to work very closely with their local civil defence organisations so that both, with their local knowledge, may conjointly solve their respective problems.

Industrial Civil Defence Service

When industry was first asked to devote some attention to civil defence, in 1951, guidance was given in a Home Office publication entitled 'Civil Defence Industrial Bulletin No. 1.' Briefly, this pamphlet outlined the Government's suggestions for industrial civil defence. It made reference to the need for planning and training and indicated the main points to which attention should be given. In July, 1953, a second bulletin was issued dealing with the formation of the Industrial Civil Defence Service, a voluntary organisation that would be separate from the Civil Defence Corps, but which would be built up on similar lines to work parallel with it. Of particular interest are the proposals for the formation of Industrial Civil Defence Groups, each of which consists of a number of industrial establishments, working together as a single unit for civil defence purposes, i.e., life saving, first-aid and fire fighting. The gas industry has rightly agreed to play what part it can in this organisation, subject to the industry's primary responsibility of maintaining gas supplies.

Information contained in the bulletins is supplemented from time to time by the issue, from the Home Office, of Industrial Civil Defence Circulars. Of particular importance is Circular No. 1 of 1952 (as amended by Circulars 1 and 3 of 1953), which deals with the eligibility of personnel to enrol in the service, and which outlines the procedure to be adopted in the case of employees who are members of any of Her Majesty's Services' reserves. All industry must be prepared to play its part if the Industrial Civil Defence Service is to achieve its object in war time. Too many firms, at the present time, tend to hold an insular outlook on civil defence. They must realise that, if they expect to receive help in time of need, they must also be prepared to give. The civil defence organisation of the future cannot afford to carry passengers, and the sooner this is realised the better it will be for all concerned.

Problems of Training

The major problem of training is a psychological one relating to the general attitude to civil defence. If people can be persuaded that, despite a slight lessening in international tension and the potential destruction of atomic weapons, civil defence is still essential as a form of insurance against future war, other training problems are relatively insignificant.

So far as industry is concerned, the success of any training scheme must depend upon the encouragement given to it by higher management. When encouragement and interest are lacking at the top, there is little hope of satisfactory progress lower down the scale. Senior members of the administrative and engineering staffs should have a fairly detailed background knowledge of the whole of the civil defence organisation, since they will, in war time, be responsible for augmenting plans made now.

Training, to be effective, must be based on a common doctrine, be realistic and interesting, continuous and progressive. The civil defence instructor is taught, and teaches, the common doctrine. If he is keen, he can provide realism and interest, but continuity and progress must depend on the availability of members of the class.

The training of shift workers cannot easily be fitted in to spells of early morning or night duty. The provision of adequate lecture, or of class-room, facilities is often difficult even on a large works. It is better to find more suitable accommodation clear of the works, provided that it does not entail excessive travelling.

The briefing of members of a class prior to the commencement of a programme is a point that is often overlooked. When this is not done, chaos inevitably follows and no credit is reflected on the local administrative arrangements. On the face of it, this may not appear to be a training problem, but it is one often encountered by instructors who have to rely on other officials either publishing notices or verbally warning employees.

Question of Cost

It is difficult to estimate the cost of due functioning measures in the industry. Some figures are available, but they are not quoted for security reasons. The cost of training can be quickly examined. Based on approximate average hourly rates for manual and non-manual staff, a basic general civil defence course occupying 22 hr. and with 12 students in the class, would cost, in wages only, between £60 and £70, *i.e.*, between £5 and £6 per head. This figure takes into account the wage of the instructor during training periods, but makes no provision for heat, light, training equipment or accommodation, the cost of which must depend on local circumstances.

In the West Midlands area, the total cost, even of training 1,000 employees, represents a very minute fraction of the total expenditure of the Board. Since training is carried out in normal working hours, cost is not an additional expense, but represents rather a loss of service.

Basic training should be followed by section training and exercises, particularly for the control (or headquarters) and wardens sections of the civil defence unit. Where practicable, further rescue training is also of course desirable. In the Civil Defence Corps, the second stage of training of these three sections is designed to occupy some 60 hr. It is not suggested that a similar length of time will be required in the gas industry, since much of the Corps syllabus relates to matters that, on the whole, will not concern the industry to a detailed degree. It is more likely that about another 20 hr. will suffice for the actual training although a further period of time will have to be devoted to exercises.

In terms of cost, therefore, expenditure per head employee trained is likely to be of the order of £12 to £15.

Once the initial instruction has been completed, annual expenditure on civil defence training will tend to remain fairly constant, but at a lower level since it will only be necessary to train new employees and to hold periodic refresher courses and exercises for those already trained.

Peace-Time Use for War-Time Organisation

In the Civil Defence Corps, the position has now been reached in many parts of the country of having an adequately trained nucleus of a division available at short notice. Rescue parties, for instance, can be called out to assist at the scenes of railway accidents involving the release of trapped passengers. The welfare section is able to cope with other types of emergencies such as the housing and feeding at short notice of people driven from their homes by floods.

The nationalised gas industry could, at the present time, direct mains repair and fittings services to the scene of an emergency at very short notice. In the case of an emergency at a works, it might take a little longer at the moment to find and despatch suitable assistance, but if the normal resources of the industry are coupled to civil defence requirements to provide an emergency service, such a service would be well worth while.

It would be necessary to compile registers of skilled tradesmen such as works fitters, pipe fitters, platers, welders, electricians, steel erectors, drivers of tracked vehicles, etc., and prepare an emergency duty roster. At the same time the register could include a note as to the availability at the various works of mobile or portable plant and equipment, and machine shop facilities. The foregoing, combined with the necessary transport and reference to registers of surplus plant, already held by area boards, could form a basis either for an area board or a national emergency service.

Reinforcement could be made available from the resources of specialist contractors who, it is felt, would not wish to be dissociated with such a scheme.

It has been made clear by many eminent statesmen that the nation is not preparing for war. Rather it is looking to its defences so as to ensure that, if the threat of war does approach nearer, there is in being a civil defence organisation capable of rapid expansion. Such an organisation must be capable of not only keeping up the morale of the people, but also of ensuring that production is maintained at as high a level as possible despite enemy attack from the air.

National Defence Policy

It is significant to note that the Civil Defence Corps is now recognised as the fourth arm of the Services, and it is the author's firm belief that, so long as the nation has its Royal Navy, Army and R.A.F., then it will also have its Civil Defence organisation. So far as industry is concerned, the policy is to have an organisation manned and officered by personnel in industry. In other words, it is civil defence in industry for industry by industry.

The nationalised industries are agreed that civil defence is necessary, otherwise they would not be carrying out planning and training as they are doing. They are being encouraged, to some extent, by financial assistance from the Government, and it is in the national interest that the utility services set an example in taking their civil defence measures seriously. By so doing, they cannot fail to follow national policy and so be prepared.

DISCUSSION

Mr. G. le B. Diamond (Chairman, West Midlands Gas Board) said that with the declaration of war in September, 1939, we saw for the first time a complete mobilisation of the nation's civil defence forces, and everyone was of opinion that the job of training and organisation had been exceedingly well done. Thereafter there followed a long period of time when nothing happened, and there was a public reaction to civil defence, with criticism that the whole thing had been overplayed. We had short memories, and, after all, it was 15 years since the commencment of the last war, so he supposed it was not surprising to find people thinking that civil defence was being overplayed. He hoped everyone who had heard the paper presented would draw the conclusion that civil defence was worth while, even if they could not do anything about a direct hit, and they certainly could not do anything about a direct hit with a hydrogen bomb. Nevertheless, there must be vast fringe areas in an attack, where all the ramifications of civil defence, including the provision of shelters, must result in the saving of much life, and we must therefore do all in our power to foster the training of employees and to give support to organised civil defence efforts.

Restoring Gas Supplies

The great difficulty, as he saw it, of trying to imagine the special aspects of the problem which appertained to the gas industry was caused by the enormous extent and variety of the types of incidents for which preparations had to be made. These could range from the complete destruction of a town, with all its public utilities, buildings and citizens, on a scale which would preclude rebuilding, to the relatively minor incidents of gasholders and gasworks plant being damaged by blast but not so seriously damaged that they could not be readily and quickly repaired. There was little they could do under catastrophic conditions, but much could and must be done to restore supplies where that was humanly possible. Some of the lessons of the last war, which were learned in a very hard school, should not readily be forgotten. In the first place, as the author had said, recourse must be had to the existing staff of skilled fitters, mainlayers, and other personnel, who could be found only on and about an established gas undertaking. The unskilled labour could be drawn from the pools arranged by the Ministry of Works or by the Regional Commissioner.

The first aid repair to a damaged gasworks required much ingenious improvisation. In one case in the south east of England, during the last war, a set of purifiers was constructed in an incredibly short space of time with standard cast-iron plates, which were intended for the construction of large water tanks and were obtained off the peg. Elsewhere a C.W.G. plant was made from old boiler shells and other vessels to hand, in about a fortnight. The biggest trouble that confronted the restoration of the supply network on that occasion was the widespread nature of the damage, the ingress of water to the mains and the removal of many hundreds of tons of rubble from places that needed access.

The Civil Defence Committee

Much had already been done by the Civil Defence Committee, under the chairmanship of Mr. Birks, to plan ahead and to obtain selected items of gasworks plant which would be invaluable if an emergency occurred, but it was doubtful whether a sufficient accumulation of cast-iron pipes and specials could be assembled under present conditions, when there was such a great demand for new housing estates and for integration. When the time came, however, to replenish the pipe yards they must remember not to get too many in one place, convenient though that might be from the operational point of view, for there were innumerable cases in the last war of pipe stocks shattered or perforated like pepper boxes by flying missiles and rendered quite useless.

He would like to know the answers to a number of questions, such as: (1) How could they afford to build shelters on an appropriate scale with their meagre resources of labour and capital? (2) How were they to black out retort houses and works plant unless an adequate supply of material was made available? (3) What happened if they had a 'Pearl Harbour attack' without a declaration of war and without warning? To do nothing was defeatism of the worst kind and they must take civil defence seriously and do what they could now with the resources at their command.

Key Workers

Mr. G. F. Oliver (Deputy Chief Engineer and Civil Defence Officer, South Western Gas Board) said the Industrial Civil Defence Service, a voluntary organisation and separate from the Civil Defence Corps, had been designed primarily for industrial factories, and self-help and mutual aid between factories were two of the main features. It was apparent from recent circulars that the personnel engaged in due functioning measures were excluded from membership of the Industrial Civil Defence Service and were separate from those who would be enrolled. Almost the whole of the civil defence efforts of the area boards would revolve round due functioning measures and personnel—the key workers, the boilermen, the water gas operators, the gasholder attendants and valvemen, the people whose prime duty it was to ensure the continued functioning of the gasworks under aerial attack, the fitters, mains and service layers engaged in fighting blazing gas mains in the city streets. All were excluded from the Industrial Civil Defence Service and yet they were expected to join the service

and to provide personnel to be trained for life saving and fire fighting.

The people who would be left to enrol would be few and would be confined mostly to clerical workers, who would be trained, according to the circular, in standard civil defence techniques and operations at the places where they were raised. He felt that these personnel would not be of much use on a works fighting fires and carrying out rescue work, and they might well be an embarrassment as opposed to the due functioning personnel who were fully acquainted with the highly specialised work and conditions. The exclusion of due functioning personnel from the Industrial Civil Defence Service would appear to be particularly unfortunate.

A Useful Committee

The author had mentioned liaison with Government Departments and with other utility services, but the arrangements he outlined seemed rather haphazard. In the South West there existed a Regional Public Utilities Civil Defence Committee, on which sat not only representatives of the three utilities—gas, water and electricity—but also representatives from the railways, docks, Home Office, etc. That Committee formed an excellent method of keeping in touch with other utilities and of exchanging ideas and comparing efforts. He did not know whether similar committees existed in other areas, but experience led him to believe that it was well worth the time spent on it.

Laying of bulk transmission mains and the integration of small works had reached a peak of late. How often had they been told that they were doing the wrong thing from the national and civil defence point of view and that they were putting all their eggs into one basket? Following in the wake of integration had come the interconnecting of major works for the purpose of base-load working, and these connections could well be used to pass gas to the outer areas of a stricken city. Bristol was already connected by high-pressure transmission mains to Bath, Swindon, Gloucester and Cheltenham and would, he hoped, eventually be connected in that way to Weston-super-Mare. Taking Bristol as the guinea-pig, these five works, ranging from 12 to 40 miles distant, could pass gas to the periphery areas of Bristol, the central area being valved off. These were not connections installed for civil defence purposes. They had been installed to effect economy in plant and capital and they had an economic everyday use, but how immeasurably greater would be their value in time of war as a defence against the effects of the hydrogen bomb! Such connections should receive high-level consideration as early as possible.

Possible Gas Warfare

Mr. J. Baxendale (Chief Civil Defence Officer, North Eastern Gas Board) said although great emphasis was laid on atomic weapons, the possible use of gas in wartime should not be overlooked, and its dismissal in the paper in a single paragraph tended to reduce the attention that should be focused on it. Modern gases were invisible, tasteless and odourless, and highly lethal. Their use would present a problem equally as great as that produced by any atomic weapon, and, moreover, they would not destroy the industrial wealth of the country for any invader.

The author's reference to communications was not complete, without consideration being given to the use of field telephones, which could be of great value after a raid, especially to link the various sections of a large undertaking. He had stressed the necessity for alternative supplies of water, and in that respect bore holes provided an admirable source of supply, provided that the necessary steps were taken to provide pumping equipment independent of town electricity. Bore hole water was the least likely to be contaminated by any enemy action or sabotage, and prior testing to ascertain its suitability for human consumption could be arranged. Such bore holes proved of great use in the city of Leeds during the last war, both for fire fighting and for the distribution of drinking water by the local authority to the general public.

Isolation of Mains

With regard to the isolation of gas mains in the event of attack, one method used in the last war to deal with night bombing was worthy of consideration. This entailed the closing of each valve save one to the various sectors in the city during an evening by motor cycle patrols. Thus in the event of a raid only one valve was required to be shut in each sector for isolation. The valves were opened in the early morning before the load came on. One advantage of the system was that it ensured that all valves could be turned. The author suggested the formation of works repair gangs by each undertaking contributing to their make-up. Such method would appear to be fraught with danger, for what assurance had the author got that men would be able to make the rendezvous or that road conditions would permit individual picking up by lorry? The fact that names appeared on a central register would not indicate availability for duty. It would appear to be advantageous to avoid the assembly of transport and mains repair gangs and their equipment in central depôts. Dispersal to smaller depôts round the perimeter of target areas would reduce the risk of casualties and damage and would ensure freedom to manœuvre and deploy.

Mr. F. H. Bate (Divisional Engineer, Wolverhampton and District, West Midlands Gas Board) said the training of personnel was of vital importance. The author had described the civil defence training, but the training of existing technical staff to meet extensions of their normal technical duties was equally important. In an atomic war casualties would be heavy and it might be necessary to replace all the staff of a district. He suggested, therefore, that there should be some prior transfers of the younger technical men as part of civil defence training. These men could be transferred between undertakings in the same division or group. The length and nature of the transfers should depend on local circumstances, but it would be valuable training for the younger men to acquire experience on two or three undertakings in addition to their own. The knowledge and experience gained would be invaluable in time of war, and it would also be very useful in peace-time in the event of any unexpected emergency.

To assist the transfer of technical personnel, he suggested that it would be advisable to effect some standardisation. An instance of this came readily to mind in the identification of pipe lines and services, and he thought they should give serious consideration to the British Standard Specification entitled 'The Colour Identification of Pipelines.' That Specification was issued in 1951, and had been adopted by all the Ministries and by many large firms. If they had to adopt some such practice in wartime, it was worth while following the Specification now for all future paintwork.

Standby Plant

Provision of standby plant was a formidable item, and he suggested that the cost might be reduced by retaining the old units when new plant was installed. For example, exhausters and boosters were often replaced because they had become undersized. Such units, occupying small storage space, should be retained as a civil defence reserve. Boiler plant if damaged would be very difficult to replace, but there were many cases in which new boilers were installed on a completely new site. In these circumstances the old boilers might be retained in their existing positions for a few years, in case they were required again, even if they were only capable of working at reduced pressures.

These thoughts led to the consideration of small works that were being closed down. In general, those works were situated in small towns which would become reception areas. In these circumstances even a limited production of gas would be invaluable, particularly if there were shadow factories in the district or if the major production stations became damaged. Therefore it might be prudent to leave such plant intact for a short period after the closing down of a small works.

Mr. T. N. Dent (Divisional Engineer and Manager, Bristol-Bath Division, South Western Gas Board) said that to his mind the paper did not come to grips with the fundamental problem which must face all those concerned with the 'due functioning' of gas undertakings under air attack in any future war. That problem was obviously the maintaining of gas supplies under the worst conditions, and he suggested that the most useful work, so far as the gas industry was concerned, if they were to do more than pay lip service to civil defence, was to plan in peace-time for such conditions. Those conditions were no doubt the complete destruction of a major gas-producing station or the partial destruction sufficient to bring about the complete cessation of gas production for six months or longer.

Planning of integration schemes should make provision for the exchange of gas in bulk for wartime operations as well as peace-time economy. The very fact that affected areas could use their full normal supplies meant that the position was not nearly so hopeless as it might well appear to be at first sight. The more comprehensive the interlinking in peace-time, the more the load could be spread over the undamaged stations. So far as district valving was concerned, while it might be essential for wartime conditions it could also make its valuable contribution to many problems of peace-time gas distribution. If gas supplies were not planned to be available in such an emergency or such a catastrophe he would suggest that the necessity of civil defence training of personnel simply did not arise except in so far as it was the duty of every able-bodied person, as a good citizen, to make his contribution. They must never lose sight of the fact that our country was and would be for some decades to come dependent on the gas industry for maintaining a satisfactory standard of life for its people.

Mr. Marshall promised to reply in writing.

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SOUTHERN

Price Uniformity Impracticable

The June meeting of the Southern Gas Consultative Council at Bournemouth on June 2 coincided with the ninety-first annual meeting of the Institution of Gas Engineers, and as both Mr. J. T. Haynes and Mr. W. K. Tate, the outgoing and incoming President of the Institution, are Divisional General Managers in the Southern area, the Council sent round to the meeting in the Winter Gardens its congratulations on their distinguished position in the gas industry and wishes for success in their work.

The Council has for some time been pressing the Southern Gas Board to publish the amount of meter rents. Hitherto the application form signed by the consumer has merely stated that the consumer will pay the appropriate meter rent, or words to that effect. Notification was now received that arrangements had been made for the current charges for the hire of meters to be shown on the application forms for ordinary consumers when they are printed, and that in the meantime slips were being prepared and would be attached to existing stocks of application forms.

A question whether a discount for prompt payment of gas accounts would be in the financial interests of the Board had been submitted. The Board replied that when it had considered tariffs it had also examined the question of discount, but had realised that it could not be introduced without further increases in the published prices of gas.

Price Differences

Attention was drawn to the fact that while the price of gas at Wallingford was 22d. per therm, the price at Didcot, only six miles away, was 25.5d. per therm. Enquiries had been made of the Gas Board for the reasons for the difference in price, and a reply had been received stating that Didcot formed part of the Oxford undertaking in the Northern Division, while Wallingford was part of the Reading undertaking in the Central Division. Wallingford now took all its gas from a 14 in. main laid specially from Reading to augment the supply in the Oxford area, and Didcot received some Reading gas and some Oxford gas, the proportions varying according to local demand at different times of the day and year.

There was a proposition that the boundary should be moved, but it was defeated.

A proposal 'that this Council recommends to the Southern Gas Board that the basic price of gas per therm should be uniform throughout a division' was also defeated.

Mr. N. W. Gardiner, who had been a member of the Ridley Committee, read an extract from the Ridley Report which stated:

'The production of gas is still mainly localised, and the cost of coal delivered to gasworks varies with the freight costs. On the principle that charges should closely correspond to costs, we consider that these differences in costs should be reflected in the prices charged by each local gas undertaking, and we cannot support the demands that have from time to time been made that the price of gas should be uniform throughout a gas Board's area. These proposals have a superficial attraction of equity, but in fact they are both uneconomic and inequitable as applied to the areas of most gas boards because the costs of supply in fact differ markedly in different parts of the areas.'

The Council noted a recommendation from the Western Divisional Committee that the following bodies be invited to nominate members for co-option to the Divisional Committee:—County Borough of Bournemouth, Borough of Poole, Swanage Urban District Council, Dorchester Rural District Council, and Blandford Forum Borough Council. Sanction was given for the necessary action to be taken.

The decision to co-opt additional members to the divisional committee marks an important departure from the policy that has been followed hitherto. So far only the Western Divisional Committee is co-opting members but it is still under consideration by the other divisional committees. Since the meeting letters have been sent to the local authorities mentioned with a request for the submission of names.

Central Heating

A communication from Mr. G. Russell Elliott was read to the Council in which complaint was made of the high running cost of his central heating installation. The matter had been referred to the local Divisional General Manager who had arranged for the installation to be inspected.

The building is a bungalow of post-war construction and central heating was installed by an outside heating contractor when the bungalow was built and later converted to gas operation by the local undertaking. The original cost was based on the assumption that the heat loss from the pipes below floor level would be normal. It was now evident that this was not the case and a considerable reduction in temperature occurred on the main return pipe. Part of this pipe work was now known to be in a duct and the section adjacent to the boiler had been opened. It was then found that the duct was open to the cavity of the cavity wall. The remainder of the duct was inaccessible and its route under the floor uncertain. The local undertaking considered that there might possibly be a flow of air through the duct causing abnormal heat loss. The prevention of this heat loss would reasonably be expected to reduce the consumption of gas to that originally quoted.

After discussion Mr. N. W. Gardiner (Reading) proposed, seconded by Mrs. Lefroy (Bournemouth), 'That the Consultative Council recommends to the Southern Gas Board that when a consumer asks the Board for an installation to replace a lower grade of fuel to obtain an increase of amenity, the consumer shall be notified of the relative fuel costs.'

There was some opposition to the proposal on the ground that it was unpractical, but it was eventually passed by 12 votes to eight.

NORTHERN

Gas Grid Development

The development of the North East coast gas grid which will mean that supplies can be passed from the Tees-side Division to Tyneside next winter was outlined on June 21 to the Sunderland Divisional Consumers' Committee of the Northern Gas Consultative Council by Mr. W. O. Kirkwood, Divisional General Manager. He said 25% of the work on a new 12 in. steel main running from the Ayre's Quay works at Sunderland to a point near the borough boundary had been completed, and it was scheduled for opening in December after it has been laid across the River Wear at the Queen Alexandra Bridge.

This main will form an integral part of the Northern Gas Board's North East coast gas grid for inter-divisional exchange of gas between Sunderland and Tyneside. Meanwhile work has begun on the laying of a 15 in. steel main to Ryhope from the south which will provide interlinkage between the Tees-side Division and Sunderland and should be completed in December. It is intended to transfer during next winter at least 1½ mill. cu.ft. of gas per day from the Hartlepool area to Sunderland. This additional gas will ultimately pass through the new 12 in. main from Ayre's Quay to the north borough boundary and thence to Tyneside Division to meet any deficiency of supply in the Newcastle area.

Mr. Kirkwood said that preparations were well advanced for the installation of the first gas grid control centre to house governors, meters, etc., at Chester-le-Street. This centre will in the first instance handle a supply of purified coke oven gas from the Stella Gill coke ovens and re-distribute this gas to various units in the Sunderland Division. On the completion of the new oxide purification plant at Stella Gill in September the Chester-le-Street plant will be dismantled in preparation for the installation of the gas grid control equipment. Four grid mains to and from the control centre are now almost complete.

New Plant

Mr. Kirkwood reported that a new 100-tons a day coke handling plant at the Hendon works, Sunderland, was working continuously to meet a steadily increasing demand for this type of fuel. The foundation work was complete, and approximately 30% of the main building steelwork had been erected for a new water gas plant at the same works. This latter plant was scheduled for completion in December and would not only provide valuable additional production capacity but replace existing uneconomical plant.

At Washington a new 250,000 cu.ft. capacity gasholder and ancillary plant was now reaching completion. The old 50,000 cu.ft. capacity holder, one of the few remaining rope-guided gasholders in active operation in the country, would be dismantled.

In a reference to distribution, Mr. Kirkwood said that at Sunderland Corporation's latest estate where there are 1,750 houses and the tenants are given freedom of choice as between gas and electricity for cooking more than 90% had installed gas cookers.

SOUTH WESTERN

Chairman to Discuss Tariffs

Mr. C. H. Chester, Chairman of the South Western Gas Board, will discuss questions affecting tariffs with the South Western Gas Consultative Council on July 9, it was announced at the Council meeting at Taunton on June 2. Mr. A. W. Loveys, Chairman of the Council, said that he would mention to Mr. Chester on that occasion the Council's views on the suggested appointment of a public relations officer.

A member of the Council said that all sorts of communications were prepared by members of the Board and issued to the public. Some were prepared by persons who were fundamentally administrators, gas technicians, or lawyers. It did not necessarily follow that they had the right approach to the public. He added that those who did the public relations work for the board should attend meetings of the Council.

Co-ordinating Committee

During a discussion on the installation of gas and electricity services in council houses, the Chairman mentioned the fact that the Ministry had set up a co-ordinating committee of representatives of the Coal Board, the Gas Council, and the Electricity Authority to consider the matter. Another member said she thought it was a pity that two nationalised industries should be 'pulling in different ways for their own advancement instead of pulling together for the benefit of the community.'

But Alderman H. Dodgson said although the Electricity Board had 'climbed down' considerably and was now much more reasonable, he hoped gas and electricity would not get too much together or competition would be lost.

The Chairman concluded the discussion by agreeing that there should be a national policy for the conservation of fuel in which case there could not be competition in the accepted sense.

The Council viewed with concern the decision of the Barnstaple Rural Council not to have a gas supply in its houses. Members urged that the tenants should be canvassed to ascertain their wishes and that the Board should arrange a demonstration of gas cooking in the area.

Mrs. E. J. Exelby: 'A good public relations officer would have solved this problem. It is a question of education in these rural areas.'

It was agreed to recommend the Board to arrange a canvass in the Barnstaple area to discover the demand for gas services.

After a divided discussion on a cooker cleaning service, it was agreed by the Council, with only one dissentient, to ask the Board to explore the possibility of starting a cooker cleaning service on an economic basis.

Private Enterprise

Some owners of cookers, it was stated, disliked having to clean them and would gladly pay for the Board to do the job at regular intervals. It was understood that two people were doing this privately in one area and there was considerable demand for their services. But two housewife members of the Council were in opposition to the idea, one going so far as to say that it would 'lower the prestige of the housewife.' Mrs. Exelby, however, wished good luck to those who liked cleaning their own cookers; she did not.

The Divisional Engineer and Manager, Mr. J. W. Denton, told the Exeter local committee on June 21, that there had been an increase of 17% in cooker sales over recent months as compared with last year, and an outstanding increase in sales of water heaters. The latter increase was partly due to the removal of hire-purchase restrictions and the reduction of purchase tax. He thanked the Bath and West Show Committee for their splendid organisation and co-operation on the occasion of the show at Exeter. He said many sales and enquiries had resulted from the show, and particular interest was displayed by members of the farming community in the coke-operated grain-dryer. Orders had been taken for the installation of that equipment.

Negotiations were still proceeding regarding the use of the disused works at Tiverton, and he was well aware of local feeling in the matter and the need to press forward with the negotiations. Mr. Denton said the building of the new retort house at the Basin Works, Exeter, was progressing. The linking of the main between Torquay and Exeter had been expedited to ensure that adequate supplies of gas, with scope for further expansion, would be available.

The Committee accepted the offer of two women members to obtain representative opinions from women's organisations regarding the desirability of the Gas Board instituting a service for the periodic cleaning of cookers. The opinion was expressed that the frequency and the cost of such a service would be a determining factor.

SOUTH EASTERN

Meter and Coin Trouble

East Surrey District Committee reported to the South Eastern G.C.C. on June 1 that they had given consideration to the practice of gas and electricity undertakings of placing meters in inconvenient positions.

Mrs. M. E. Bowden, presenting the Committees' report, said they recommended that greater consideration should be given to the location of meters when installing gas services. They felt the Board should take the initiative in this question which was one of considerable importance affecting the convenience of gas consumers generally.

It was decided to ask the Board for their views on the matter.

Further trouble with gas meters was reported in the Lewes area where the Board was alleged to have replaced two-coin meters with single-coin or shilling meters. The Sussex Committee said they appreciated that there were large numbers of single coin meters in serviceable condition which could not be scrapped. An assurance had been given, however, that if requested the two-coin meter would be supplied. Where a two-coin meter had previously been in use it should be replaced only by a similar type, declared the Committee.

The Boards policy was not to buy any more single coin meters, said the Chairman, but he could confirm that there were a number of this type in serviceable condition which for economy reasons could not be scrapped.

Failing in Duty

There was disagreement over a request for a meeting of the Council's Industrial Committee to receive a representation on behalf of the National Federation of Fish Friers, Ltd., concerning the Board's fish frying block tariff.

When it was suggested that unless the matter was urgent it might well wait until there was some other reasons for calling a meeting, Mr. M. C. Halliday said it was time the Industrial Committee met to review the Board's industrial tariffs generally. A proposal to leave the subject in abeyance was carried with four dissentients.

The first, Mr. J. E. P. Moore, asked that his opinion be recorded that 'the Council is failing in its duty by not complying with the request to call a meeting of the Industrial Committee.' Another dissentient, Councillor H. L. Gibbs, asked permission to move that a meeting be called of the Industrial Committee to review industrial tariffs generally.

The Chairman refused to accept the motion without prior notice.

News in Brief

The Gas Council staged a display at this year's Royal Highland Show at Dumfries, concentrating largely on the domestic aspects of the industry, with obvious success. Demonstrations were staged over the period, and a wide range of enquiries handled. The Council stand was one of the largest and most outstanding at the show.

Whessoe Long Service.—Whessoe employees with over 25 years service were guests of the Company recently on a day's outing to Scarborough. The party included wives, and 352 people participated. Out of approximately 1,400 people employed by the Company no fewer than 180 have a record of 25 years service, a large number of these having served for over 30 years.

Edinburgh Town Council has approved the construction of a multi-storey block at a site in Spey Street, off Leith Walk. Instead of central heating, the policy will be to use gas for space heating, with gas fires and gas heaters in the various rooms. Gas cooking is also being incorporated in the block.

The Bottled Gas Plant of the Anglo-Iranian Oil Company's Grangemouth refinery is to be expected to keep pace with the increasing demand for bottled gas, particularly in rural areas where isolated buildings have no constant electricity and gas supply. The new plant for bottling gas as a liquid will be ready early next year, increasing the refinery's present capacity of 7,000 tons a year to 16,000 tons.

'Journal' Sees Baking Demonstration

Thermostatic control, flame failure levice, and refractory lining are features of the high efficiency baking ovens manufactured by Essard, Ltd., of 216, Westbourne Grove, London, W.11. Manufactured of rust-proofed steel with three-coat stoved enamel finish, these ovens are of streamlined design with no hard-to-clean projections. The refractory brick linings are provided for the side, back and top of the ovens, and the gravity drop doors are heavily insulated. Enclosed patent burners and pilot ignition are also a feature.

The ovens are made in three sizes. The single deck, model D.101, is 3 ft. 6 in. high, 3 ft. wide, and 3 ft. deep, the tray size being 30 in. x 24 in. The D.201 two-deck model is 4 ft. 4 in. in height, and the D.301 three-deck model is 5 ft. 8 in. height, the other measurements being the same; all three models are available in the larger tray sizes.

A chartered gas engineer, reporting on the Essard three-deck oven submitted for testing, wrote:

'The standard of combustion is very satisfactory. Time for oven to reach 450°F. (from 69° ambient) was 50 minutes; gas rate 125 cu.ft. per hour (62,500 B.Th.U. per hour). Steadiness of temperature in use and recovery to original temperature after disturbance is very good. The temperatures at various parts of top and lower decks are sufficiently close to ensure no noticeable difference during baking.

'Surface temperatures were remarkably low and show that care has been exercised in the insulation, which is of a very high standard throughout. Heat loss at doors, etc., is negligible. The gas required to maintain at 450°F. was 59.8 cu.ft. per hour (29,900 B.Th.U. per hour).'

A member of the 'JOURNAL' staff was present at a demonstration when he saw six trays of queen cakes (noted for their high content of fat and sugar) extracted after 20 minutes (oven temperature 375°). Their colour was uniform and there was an absence of side or bottom heat. It is fair to comment, however, that this oven was operated on Calor gas.

A feature of this oven is the refractory linings on sides and back, and the unusual depth of insulation on doors, which should contribute greatly to heat radiation and conservation. These factors account for the very economic consumption of fuel. The provision of thermostatic control, external visible-reading thermometer, flame-failure safety device are features which greatly enhance efficiency. The provision of a flame-failure device as a special safety measure, particularly where the ovens are positioned in confined spaces, is highly approved. The recommendations of the British Standards Institution have been carried out in manufacture, and in addition the suggestions of the gas boards' research departments have been embodied.—*Essard, Ltd., 216, Westbourne Grove London, W.11.*

Decrease in Coleraine Gas Output

Coleraine Borough Council at its monthly meeting on June 8 adopted the report of the Gas Committee which stated that the amount of gas manufactured from April 28 to June 2 was 14,881,900 cu.ft., a decrease of 793,000 cu.ft. as compared with the corresponding period last year.

Other points from the meeting were:

(1) The Manager, Mr. W. R. Armstrong, reported having arranged to receive a further penny a gallon for the sale of tar. This would give an estimated increased income of £300 per year.

(2) Mr. Armstrong said the actual cost to the works of the recent wage increase of 1½d. per hour for day workers and shift workers would be £205 per annum, and this with the recent increase in coal and freight costs would increase the expenditure in a full year by approximately £2,000.

The Inside Story

A film designed to encourage the wider use of Jones KL mobile cranes—a manufacture of K. & L. Steelfounders and Engineers, Ltd., was given a private showing to 180 guests from industry and the Press in London recently.

Entitled 'The Inside Story' and subtitled 'At Home with the Joneses,' the film opened with a glimpse of a festive occasion to mark 'K. & L.'s' 25 years' association with the '600' Group. Guided by a commentary from popular story-teller and broadcaster John Slater, the audience was then taken to the K. & L. factory where Jones KL mobile cranes are built. The closing sequence of the film dealt with the rigorous testing over what was described as 'a Commando course' of the completed cranes, particularly the 4-ton capacity KL 44 and the 6-ton KL 66.

Before the '600' Group's first venture into industrial films commenced, Mr. Cyril M. Cohen, Chairman and Managing Director of George Cohen Sons & Co., Ltd., gave a short introduction.

ONE VEHICLE WITH MANY USES

Inheriting on vesting day a fleet of vehicles of considerable diversity in type and make, many of which were of great age, it has been the policy of the Portsmouth, Gosport and Bognor Regis gas undertaking transport department to standardise on certain types in the various classes. Coupled with reliability and economy in operating costs, the aim is now to keep the stock of spare parts as low as possible—a factor which is materially assisted in that certain manufacturers, whose vehicles are operated, have main stockists in the area.

Consideration has been given to the design of vehicles which can be adapted for a variety of purposes. While some can admittedly be fully employed on one class of work such as coal or coke haulage, it is considered desirable in a small fleet to have a number which can be transferred from one class of work to another according to seasonal or other special requirements.

To this end a Dennis 'Pax' 5-ton long wheel base vehicle was placed in service recently which has been fitted with a body so designed that it can be employed on any of the following classes of work: Bulk coal and coke haulage, bagged coke deliveries, conveyance of cookers and equipment, general haulage of men and materials, and conveyance of lengthy pipes.

As will be seen from the illustrations, the body, which is constructed of light alloy, 14 ft. in length by 7 ft. 6 in. overall width, has detachable sides which themselves have top boards which are used during cartage of bulk coke. When bagged coke is to be carried, stanchions and chains are used, and 4 tons 10 cwt. can be carried in 1 cwt. sacks.

The top cover, or sliding tilt, is constructed of tubular steel framing connected by 'Sparshatt' patent jointing blocks and is so constructed that it can be used to cover the front portion or the whole of the body space, to permit side, rear, or top loading and unloading.

Four of the many uses to which the new long wheel-base vehicle has been put.

Young Designers Win 1953 Bursaries

The domestic gas appliances section of the Royal Society of Arts Industrial Art Bursaries competitions attracted a greater number of entries in 1953, states the Society's report. Candidates totalled eight as against three in 1952 and three schools were represented compared with two in the previous year.

Mr. C. R. Cheetham (27), of the L.C.C. Central School of Arts and Crafts, was recommended for the award of the Bursary of £150 in this section and Mr. J. L. Fagg (24), Kingston School of Art, would be awarded the second Bursary of £75, if available.

Candidates were required to submit designs showing perspective and typical working details for domestic gas appliances. There had to be an original design for each of the following: (1) A domestic gas-fired convector-radiant heater, to be either wall-fitted, wall-suspended, built-in low level or free-standing, to be suitable for a living room; and (2) either: A breakfast (table) cooker, or a domestic gas water heater. Candidates were asked to submit a coloured perspective drawing showing the external appearance and fully detailed constructional drawings of both appliances.

The jury of four considered that the standard of work was higher than in previous years. 'Candidates had clearly taken trouble to study the technical as well as the aesthetic problems involved in the design.'

Although some of the submissions showed that there was still a tendency to work from the outside of the appliance inwards, many designs showed a good practical sense and contained only such errors as could not have been avoided save by a greater experience of the manufacturing side of the industry.

Above Standard

The work of the two Bursary winners was excellent and above the standard of the others and in fact of any of any earlier entrants in this section.

'Mr. Cheetham's set test submissions,' continued the report of the jury, 'were refreshingly unconventional and they were excellent both in technique and in appearance. The fire guard embodied in his design for a gas inset space heater was a simple yet effective solution to the design problem involved by the new safety regulations.

'There were certain minor difficulties about this design which the jury thought might easily be sorted out during the practical processes of manufacture.'

Mr. Cheetham won the Bursary awarded in this section of the competition in 1952, and the jury were pleased to see that his designs justified their belief then that he would benefit greatly from the award of a travelling bursary.

In the domestic solid fuel burning appliances section, a separate jury recommended Mr. F. Watkins, School of Wood, Metals and Plastics, Royal College of Art, aged 28, for the Bursary. They were agreed that his work was remarkably good, and that his sense of design and the ingenuity shown in the planning and presentation of his set test proposals for a free standing open fire were excellent.

Mr. W. E. Wren, a 27-years-old candidate from the drawing office of a Scottish firm was recommended for an additional Bursary, if that could be arranged, for his solid fuel burning domestic heater.

The 1953 report also gives particulars of the 1954 competition. The London address of the Royal Society of Arts, is John Adam Street, Adelphi, W.C.2.

Back to Food Freedom

To celebrate the removal of food rationing restrictions the Cardiff undertaking of the Wales Gas Board decided to run a short series of evening cookery demonstrations which were to feature French, Jewish, Spanish, German, and Italian methods of cooking.

The first of these demonstrations was given on June 16 to a capacity audience. The menu had been publicised some days before, and this proved an attraction to the large number of people who attended, and also the considerable number who were unable to gain admission. A meal was cooked in the French style and the menu was as follows:—

Potage a la Hollandaise
Filets de Merlan a la Tyrolienne
Filets de Bouef a la Bernaise
Pouding Jubilee
Amandes au Diable
Allumettes
Café

The meal was prepared for four people and at the conclusion of the demonstration, which was given by Miss E. G. Rehbein, of the Cardiff undertaking, four Cardiff housewives were invited to partake of the repast.

Promoting Water Heater Sales

With the introduction of vigorous and enterprising schemes to promote the sale of water heaters, the need has become apparent to train quickly new staffs and wherever possible to give refresher courses to existing personnel. Mr. F. M. Taylor, Chief Instructor for Ascot Water Heaters, Ltd., has been busy in this connection during recent weeks.

He gave a three-days series of lectures at the Salford undertaking of the North Western Gas Board at which personnel attended from the Swinton, Irlam, Salford, and Worsley undertakings. On the third day Mr. Taylor addressed a gathering of municipal architects on the advantages of gas as a heating medium, followed by a brief review of the various heaters manufactured by Ascot, with particular reference to the 715 Balanced Flue Multipoint. This was followed in the afternoon by a similar reception for officials of local public health departments where Mr. Taylor gave a similar address.

Mr. Taylor subsequently gave a four-day series of lectures to sales representatives, inspectors, fitters and maintenance personnel of the South Western Gas Board, Bristol, a three-day series to fitters of the Weston-super-Mare Sub-Division, South Western Gas Board, a five-day course of instruction to plumbing trainees on all aspects of instantaneous water heating by gas at the Government Training Centre, Stafford Road, Waddon, Surrey, and a lecture to 20 building and plumbing students at the College of Further Education, Salisbury.

PAPERS AT THE PARIS MEETING

The following papers were presented at the 71st Congress of the Association Technique, held in Paris from June 22 to 25.

1.—Les charbons lorrains. Méthodes d'analyse et d'investigation. Caractéristiques. Classification, par M. Schwarz.

2.—Utilisation pratique des débitmètres pour la mesure des débits de gaz naturel, par MM. Couraud et Reynes.

3.—Contribution à l'étude de dispositifs déprimogènes amplificateurs destinés au contrôle des débits dans les feeders de gaz, par MM. Laurent et Tétart.

4.—La mesure continue de l'humidité d'une atmosphère. Hygromètre électrique à conduction thermique, par M. Le Flem.

5.—Mesure de la viscosité des gaz. Application de la viscosimétrie au dosage de quelques mélanges binaires gazeux, par M. Verrien.

6.—Aspects fondamentaux de la fluidisation, par M. Fort.

7.—La houille, colloïde hydrophile, par M. Longchambon.

8.—Utilisation de la radiographie et de la radiocinématographie pour l'étude de la cokéfaction, par MM. Peytavy et Lahouste.

9.—La cornue Jenkner: moyen d'étude des rendements en sous-produits et de la qualité du coke, par M. Wildenstein.

10.—Application de la méthode des pesées continues enregistrées à l'étude des charbons en chauffe progressive, par M. Vdovenko.

11.—L'amélioration de la qualité du coke par le procédé Sovaco dans le cadre d'un remaiennent général des installations de manutention du charbon à l'Usine à gaz de Limoges, par MM. Allain et Faye.

12.—Contribution à l'étude de la production d'un coke de qualité, par M. Solente.

13.—Cracking de distillats paraffineux dans les fours Woodall-Duckham, par M. Pataud.

14.—Transformation et essais d'un four Glover-West à 8 cornues à l'Usine à gaz de La Rochelle, par M. Theillaud.

15.—Obtention de goudrons bruts à faible teneur en eau, par M. Demiguel.

16.—Obtention d'eaux ammoniacales fortes par modification des installations de traitement du gas à l'Usine de Nanterre, par M. Demiguel.

17.—Quelques recherches sur les principes de l'épuration sèche des gaz. II. La réaction simultanée de Fe2 O3 avec H2S et O2 par M. Bramsley.

18.—Essais pratiques d'un dépoussiéreur à huile à la station de réception de Bourges, par M. de Puybaudet.

19.—Aptitude des gaz à la formation des gommes, par M. Duchemin avec la collaboration de M. Dumay.

20.—Le problème de la mise en peinture des gazomètres, par M. Marpon.

21.—Tables à calcul électriques pour le calcul des réseaux maillés, par MM. Renouard et de Brem.

22.—Essais de laboratoire sur les matières plastiques susceptibles d'être utilisées dans la distribution du gaz, par M. J.-M. Prévot.

23.—Réalisation d'appareils portatifs pour la mesure sur le terrain des fuites électriques le long des feeders. Résultats pratiques par MM. Legrand et Minerbe.

24.—Contrôle des compteurs de gaz. Verificateur L. M., par M. Martin avec la collaboration de M. Lefebvre.

25.—Le chauffage par panneaux radiants, par M. de Jerphanion.

26.—Perfectionnements apportés aux émetteurs de rayonnement infra-rouge pour accroître leur facteur de rayonnement et diminuer leur durée de mise en régime, par M. Doncesco.

27.—Utilisations industrielles du rayonnement infra-rouge, par M. Peyrichou.

28.—Contribution à l'étude de la cémentation de l'acier par le gaz naturel, par M. Coq.

29.—Le gaz d'appoint dans les petites usines à gaz et la constance du service chez les abonnés, par M. Bienvenu.

30.—Etude sur l'augmentation possible de la production dans une usine à gaz par addition de gaz de gazogène propané, par M. Colas.

31.—Etude expérimentale du fonctionnement d'aspirateurs statiques de fumées, par M. Louis.

32.—Le séparation méthodique des goudrons et des eaux à la nouvelle Usine à gaz de Vierzon, par MM. Maisonnier et Boudrenghien.

IN PARLIAMENT

Winter's Tale

A touch of gloomy foreboding was apparent among questioners from both sides of the House when discussing our fuel supplies for next winter. This implication that a serious shortage was likely and that the winter's tale would be nothing if not spine-chilling was even noticeable in the Minister's own remarks; such phrases as 'the gravity of the prospects' did little to inspire confidence. However, when subjected to a barrage of questions about summer stocking, Mr. Geoffrey Lloyd's replies held at least a glimmer of hope. So far, he explained, distributed stocks were somewhat higher than last year, and in reply to Mr. P. J. Noel-Baker (Lab., Derby South), he said that consumers had taken about 300,000 tons more than in the same period last summer. Pressed by Mr. G. Nabarro (Con., Kidderminster) for an assurance that in the course of the next nine months, the Coal Board would deliver to merchants enough coal to enable them to honour their obligations in supplying the maximum allocation to householders, Mr. Lloyd took evasive action. 'It depends,' he said, 'upon the level of production which members in all quarters of the House and, indeed, people throughout the country wish to see increased.' Which sounded good but did not get us far.

A word in favour of the National Union of Mineworkers was interposed by Mr. W. R. Blyton (Lab., Houghton-le-Spring), who asked whether the Minister was aware that the Union were doing all they could to get the men to work on Saturdays during the summer months to meet the situation. Whereupon Mr. Lloyd said that the House and the country appreciated the 'firm and frank leadership' of the leaders of the N.U.M., and it was a fact that, no doubt following the lead that had been given, some districts and some coalfields had decided to work every Saturday this year.

Home or Away

From consideration of home production, attention turned to imports and exports. Viscount Lambton (Con., Berwick-upon-Tweed) started the ball rolling by asking whether the Minister could give an estimate of the amount of coal he expected to import this summer. In reply, Mr. Lloyd explained that it was undesirable to give such an estimate because it might prejudice the best buying of the coal at the best price by the Coal Board. Mr. A. Maude (Con., Ealing South) then wanted to know to what extent exports of British coal were to be restricted this year, in view of the decision to increase imports of coal, but Mr. Lloyd sidestepped nimbly and took refuge in figures. He said that coal exports so far this year amounted to 6½ mill. tons, at an average f.o.b. price of about £4 9s. a ton, and imports to about 400,000 tons. He expected that in 1954 exports would be about 14 mill. tons, as in 1953.

Mr. Maude then asked whether the Minister was aware that a price system which enabled coal mined in this country to be sold in this country at an average price that was probably too low, enabled it to be sold abroad at a different price and resulted in the necessity of importing coal at a still higher price, was not very satisfactory. But even when Mr. A. Holt (Lib., Bolton West) bounced into the argument to suggest that there would be no solution to the fuel problem in this country until the Coal Board got off average costing and on to marginal costing Mr. Lloyd refused to be drawn.

Testimonial for Coke

Following a question concerning the number of grades of coal recognised by the Minister's Department and the criteria on which grading was determined (the answer being seven for house coal, based on size, ash content, rate of burning and calorific value), discussion centred on coke.

The indefatigable Mr. Nabarro wanted to know what contribution was expected to be made by domestic coke supplies to the anticipated shortage of house coal next winter, and whether the Minister would give an assurance that coke would continue unrationed at least until March 31, 1955. And the equally zealous Mr. Maude asked what steps the Minister was taking to encourage sales of coke for domestic use. Mr. Lloyd replied that he did not contemplate the re-imposition of restrictions on coke sales. So far this summer sales of gas coke to the smaller consumer showed an increase of 17% over last year, and coke supplies should materially assist the fuel position next winter.

But this was not good enough for Mr. Nabarro who, mounting his hobby-horse (in the uncomfortable shape of a modern solid fuel-burning appliance), demanded that the Minister make it clear that he had removed all restrictions on coke to encourage the use of smokeless fuel and to economise overall by the best use of the millions of improved appliances which had been installed in the last five years and which were designed to burn smokeless fuel, notably coke.

It was at this point that the Minister produced this handsome testimonial (solicited, one must admit) to the efficiency of coke: 'I am grateful to my hon. Friend for giving me yet another opportunity to point out that these improved appliances reach their maximum efficiency when burning coke and that coke is the best of the smokeless fuels now available to the public.

Mr. Maude, still harping on the question of summer stocking, wanted to know if the Minister was aware that the best way of encouraging domestic consumers to stock coke during the summer was to have a price concession similar to that for house coal. To which Mr. Lloyd replied with smooth 'Yes, sir.'

Gas and Electricity Rating

Inequalities of receipts by local authorities from the British Electricity Authority's national allocation to the Exchequer for distribution among them were discussed in the House of Commons on June 18, when Mr. E. H. C. Leather (Somerset North) spoke of the burden on districts which happened to have power stations within their own precincts. Portishead, for example, spent more on housing subsidies alone than the £569 it received from the fund, whereas a district five miles away with no such burden in regard to power stations received about £1,300. He suggested that there was no inherent difference between the problems existing in the gas and electricity industries, respectively, and if an assurance could be given that the problems of the electricity industry would be treated in the same way as was proposed in the case of the gas industry it would go a long way towards removing a burden which was causing a great deal of financial hardship.

MR. GERALD NABARRO (Kidderminster) said that on March 31, 1948, the day before vesting date for electricity nationalisation, the total rateable value of the Stourport-on-Severn urban district was £108,750. On the following day, April 1, 1948, the figure fell to only £44,245, a drop of £64,505 overnight—more than 50%. A large part of that sum had to be made good by the ratepayers from other sources in the ensuing period. It meant, in fact, a substantial increase in the local rates.

There was, of course, a compensating grant from the British Electricity Authority, and in the first year after nationalisation that amounted to £14,231. But it declined at the rate of 10% per annum, and the amount of the annual grant would, therefore, be extinguished in the year 1958-59. The biggest industrial establishment in the Stourport-on-Severn urban district was the B.E.A. power station, which in present circumstances was making a totally inadequate contribution to the rateable value of the area. He hoped the conversations taking place between the gas industry and the Minister for a revision of rating arrangements would be successful.

MR. ERNEST MARPLES, Parliamentary Secretary to the Ministry of Housing and Local Government, replied that in principle rates were not intended even in the 1948 Act to be equivalent to the services rendered to the individual ratepayer. The Member for Kidderminster had asked about the gas industry, and said there had been tried a new method in that industry. 'He asked whether there could be the same arrangement for the electricity industry. The answer is that we have nearly, but not quite, agreed on a new formula for gas; and on March 16 a Ministry circular, No. 29 of 1954, stated that prolonged discussions had taken place with the Gas Council and representatives of the local authorities' associations and that a substantial measure of agreement had been reached.' They would like to consider how the new proposals for the gas industry worked out; and if they were satisfactory they could apply some allied principles to other industries of a similar nature. They would like to try the new method of rating in the gas industry first, and if it went reasonably well, then apply it to other allied industries.

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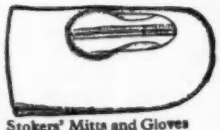
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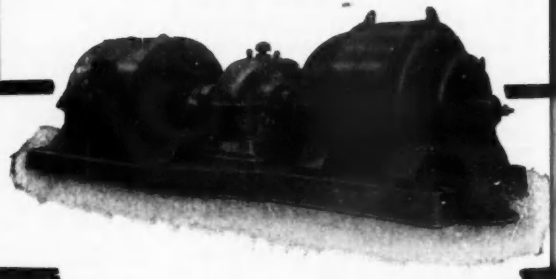
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Classified Advertisements: All small classified advertisements are charged at 1/9 per line (approx. 7 words)—minimum charge 10/6. A Box Number address occupies 2 lines, and a further 6d. is charged towards cost of postage on replies. Copy must be received by first post on Monday to ensure insertion in that week's Journal.

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APPOINTMENTS VACANT

The engagement of persons answering these advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a woman aged 18-59 inclusive unless he or she, or the employment, is excepted from the provisions of the Notification of Vacancies Order, 1952.

CHIEF CHEMIST.—Applications are invited for the situation of Chief Chemist with South-Eastern Tar Distillers Limited, Vale Road, Tonbridge. Candidates must be qualified and must have had extensive experience in industry with particular knowledge of continuous tar and benzole distillation. Permanent situation with superannuation. Salary commensurate with qualifications and experience.

Apply in writing to the General Works Manager, South-Eastern Tar Distillers Limited, Vale Road, Tonbridge.

EAST MIDLANDS GAS BOARD

SHEFFIELD & ROTHERHAM DIVISION
TECHNICAL ASSISTANT—
GRIMESTHORPE WORKS, SHEFFIELD

APPLICATIONS are invited from suitably qualified persons for the above appointment at the Grimesthorpe Works, Sheffield, at a salary within Grades A.P.T. IV/VI of the National Salary Scales for Gas Staffs (£320-£590). The initial placing on the grades will be in accordance with the experience and qualifications of the successful applicant.

Applicants should be in possession of the Institution of Gas Engineers Higher Grade Certificate in Gas Manufacture or have equivalent qualifications, and be experienced in the operation of Horizontal Retorts, Carburetted Water Gas Manufacture and purification processes.

The post is superannuable and the successful candidate will be required to pass a medical examination and, unless already subject to a pension scheme by virtue of the Gas (Pension Rights) Regulations 1950, will be required, if eligible, to join the Board's Staff Pension Scheme within six months from taking up the appointment.

Applications, giving details of education, training and experience, together with the names and addresses of two referees, should be addressed to reach the undersigned not later than July 24, 1954.

CHAS. C. WOOD,
Divisional General Manager.

Commercial Street,
Sheffield, 1.
June 24, 1954.

SCOTTISH GAS BOARD

SOUTH EAST DIVISION
HADDINGTON DISTRICT

APPLICATIONS are invited for the post of MANAGER of the Haddington District Gas Undertaking.

Applicants should be qualified Gas Engineers, possessing the Higher Grade Certificate of the Institution of Gas Engineers in Manufacture, Supply, or equivalent, a sound knowledge of the process of gas manufacture in Vertical Retorts, and have had experience in distribution and the general administration of a gas undertaking.

The salary attached to the post will be within Provincial 'B' Grade VII (£550-£630 per annum). A house, free of rent and rates, and free fuel and light will be provided.

Applications, giving full details of age, qualifications and experience and naming two referees, to reach the undersigned not later than July 19, 1954.

D. J. COLVIN,
Divisional Controller.

25, Chester Street,
Edinburgh, 3.

SCOTTISH GAS BOARD

DUNDEE GROUP
ARBROATH DISTRICT
APPOINTMENT OF DISTRICT MANAGER

APPLICATIONS are invited from qualified gas engineers for the position of DISTRICT MANAGER of the Arbroath Gas Undertaking.

Applicants must be experienced in the administration and supervision of a Gas Undertaking and have had practical experience of the control of vertical retort settings, distribution practice and general office routine.

Applicants should be corporate members of the Institution of Gas Engineers or have equivalent qualifications.

Salary applicable to the post will be £825-£1,025 per annum and a house will be available for rent.

Applicants should state whether or not the position they hold at present is superannuated and the successful candidate may require to pass a medical examination.

Applications giving full particulars of age, qualifications and experience together with the names of three referees should be lodged with the undersigned NOT LATER than Wednesday, July 21, 1954.

Gas Works,
East Dock Street,
Dundee.

W. S. JOHNSTON,
Group Manager.

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The successful applicant will be expected to show a wide knowledge of his subject, and to possess a tactful and pleasing manner.

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Short-listed applicants will be provided with detailed information relative to New Zealand living costs and other relevant matters.

E. F. GORMAN,
B.COM., M.INST.GAS E.,
Chief Engineer.

The Christchurch Gas, Coal and Coke Co., Ltd.,
P.O. Box 95, Christchurch,
New Zealand.

(*Classified advertisements continued on page* 58)

APPOINTMENTS VACANT (ctd.)

DRAUGHTSMEN required, experienced in Gas and Chemical Engineering. Pension scheme. Five-day week. Canteen facilities. Apply: W. C. Holmes & Co., Ltd., Turnbridge, Huddersfield.

ENGINEER, familiar with the gas industry and gas works practice, who can write clear and concise, English, required for monthly journal. Apply. No. 204, *Gas Journal*, 11, Bolt Court, Fleet Street, London, London, E.C.4.

EASTERN GAS BOARD

NORWICH DIVISION
NORWICH GROUP
ASSISTANT DISTRIBUTION SUPERINTENDENT

APPLICATIONS are invited from suitably qualified persons for the above position.

Applicants must be experienced in the utilisation of gas for domestic, industrial and commercial purposes, and in high and low pressure gas distribution, and should preferably possess the Institution of Gas Engineers Higher Grade Certificate in Gas Engineering (Supply) or equivalent qualification.

The commencing salary will be within the Grade A.P.T. IX, Provincial 'A' (£635-£735 per annum).

A house is available at a reasonable rent.

The successful candidate may be required to pass a medical examination, and unless already subject to a Pension Scheme by virtue of the Gas (Pension Rights) Regulations, 1950, will be required, if eligible, to join the Board's Staff Pension Scheme within six months from taking up the appointment.

Applications, stating age, and experience and giving full particulars of training, qualifications, together with the names of two referees should, in the first instance, be addressed to the Divisional General Manager within fourteen days of the publication of this notice.

Divisional Offices,
Thorpe Lodge,
1, Yarmouth Road,
Norwich,
Norfolk.

EASTERN GAS BOARD

NORWICH DIVISION
KING'S LYNN GROUP
LOCAL MANAGER—SWAFFHAM

APPLICATIONS are invited for the position of LOCAL MANAGER of the Swaffham Undertaking, which has an annual output of 19 million cubic feet.

The manufacture of gas at this Undertaking will shortly cease, as a bulk supply is to be afforded from a neighbouring Works, and preference will therefore be given to applicants having experience and ability in the installation and sales of appliances.

The commencing salary will be in A.P.T. IV or A.P.T. V, Provincial 'B', according to experience and ability, and a house will be available on a Service Tenancy.

The successful candidate may be required to pass a medical examination, and unless already subject to a Pension Scheme by virtue of the Gas (Pension Rights) Regulations, 1950, will be required, if eligible, to join the Board's Staff Pension Scheme within six months from taking up the appointment.

Applications, giving details of age, qualifications and experience, also present employment, should be submitted in the first instance to the Divisional General Manager at the undermentioned address and should be received within fourteen days of the appearance of this advertisement.

Divisional Offices,
Thorpe Lodge,
1, Yarmouth Road,
Norwich,
Norfolk.

EASTERN GAS BOARD

NORWICH DIVISION
WORKS TECHNICAL ASSISTANTS

APPLICATIONS are invited for two TECHNICAL ASSISTANTS in the Norwich Division, one to operate at Lowestoft and the other between Cromer and Sheringham Gas Works. The commencing salary will be within the range of Grades A.P.T. IV and V of the National Joint Council for Gas Staffs, Provincial 'A' Scales. At Lowestoft there is a flat available adjacent to the Works.

The duties will consist of carrying out routine works tests and technical supervision of horizontal carbonising plant, C.W.G. plant and the usual ancillary plant, and candidates should possess suitable qualifications and experience.

The successful candidates will be required to pass a medical examination and unless already subject to a pension scheme by virtue of the Gas (Pension Rights) Regulations 1950, will be required, if eligible, to join the Board's Staff Pension Scheme within six months from taking up the appointment.

Applications stating age, experience and qualifications and giving names of two referees should be addressed to the Divisional General Manager within fourteen days of the appearance of this advertisement.

Thorpe Lodge, 1, Yarmouth Road, Norwich, Norfolk.

NORTH WESTERN GAS BOARD

APPLICATIONS are invited from suitably qualified persons for the following pensionable appointments :—

1. SENIOR INSTRUCTORS at the BURNLEY and CREWE Training Centres. The commencing salary will be within Grade A.P.T. X (£690-£790 per annum).
2. INSTRUCTORS at the CREWE and OLDHAM Training Centres. The commencing salary will be within Grades A.P.T. VII-IXI (£605-£735 per annum).
3. ASSISTANT INSTRUCTORS at the BOLTON, BURNLEY, LIVERPOOL, OLDHAM, PRESTON, ST. HELENS and STOCKPORT Training Centres. The commencing salary will be within Grades A.P.T. VI-VII (£510-£645 per annum).

Applicants, who must possess the Final City and Guilds Certificate in Gas Fitting and must have had recent Gas Fitting experience on the district, should indicate clearly for which of the posts they wish to be considered. Qualifications in Gas Engineering (Supply) will be an advantage.

Detailed applications, giving the names of two referees should reach the Secretary, North Western Gas Board, 60, Whitworth Street, Manchester, 1, within 14 days.

WEST MIDLANDS GAS BOARD

BIRMINGHAM AND DISTRICT DIVISION
ENGINEER AND WORKS MANAGER
SALTLEY GAS WORKS

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The successful candidate will be directly responsible to the Divisional Engineer.

The commencing salary will be £1,650 per annum rising to a maximum of £1,800 per annum.

The post is pensionable and the successful candidate may be required to pass a medical examination.

Applications, stating age, qualifications and experience, together with the names of two referees, should be addressed to the Industrial Relations Officer, West Midlands Gas Board, 6, Augustus Road, Edgbaston, Birmingham, 15, to reach him within fifteen days of the appearance of this advertisement.

F. H. CURETON,
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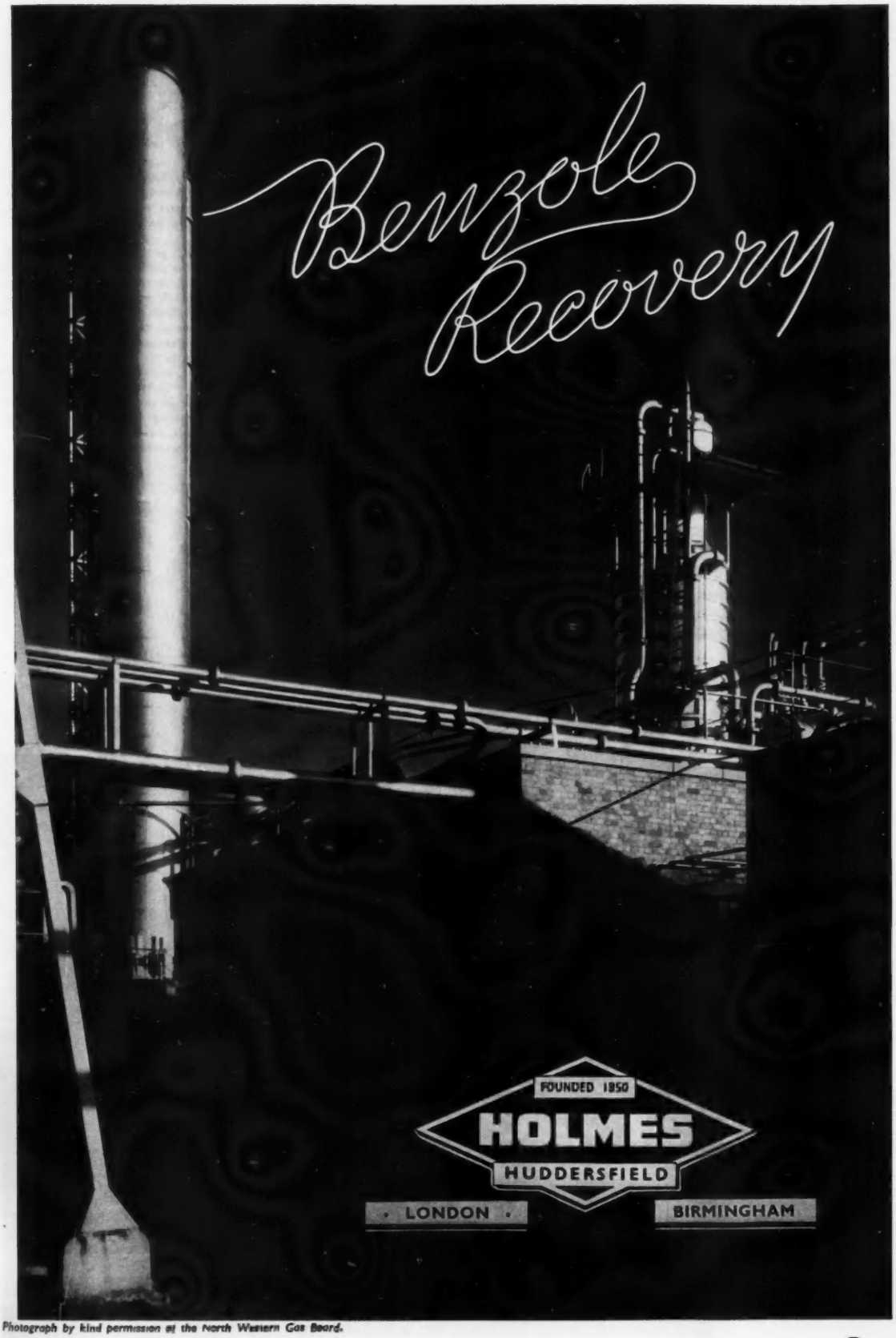

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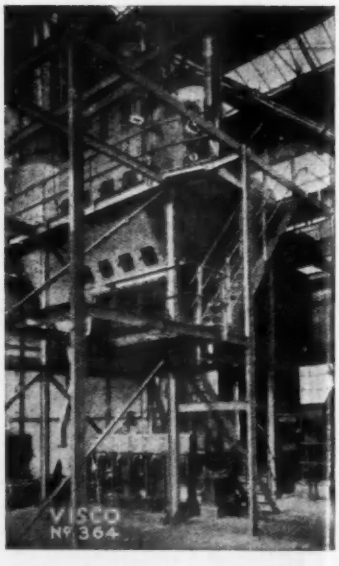

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VISCO ENGINEERING CO. LTD. STAFFORD RD. CROYDON

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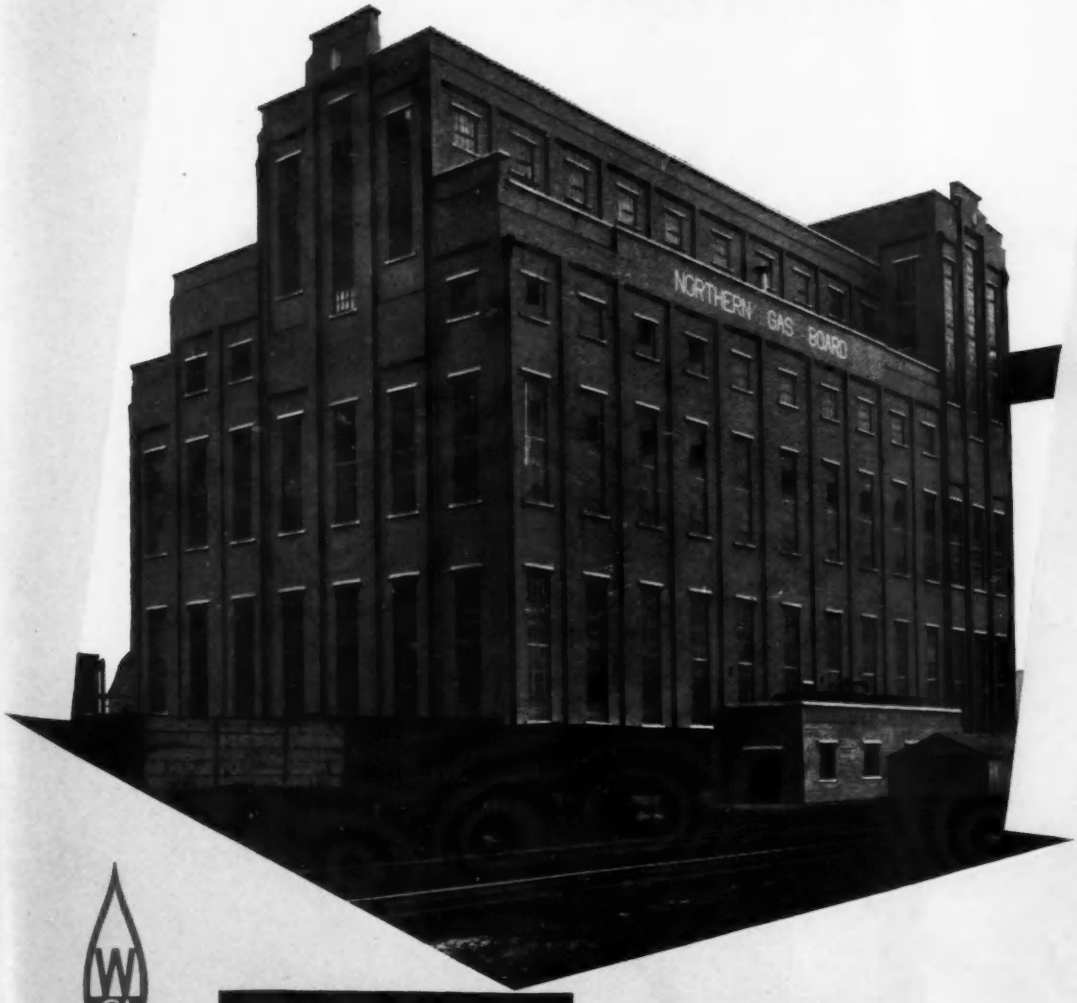
STOCKTON'S NEW PLANT . . . .

An installation of 64 Glover-West Continuous Vertical Retorts, built for the Tees-side Division of the Northern Gas Board. The settings are constructed on the "Balanced Heating" principle and fuel gas is generated in West's "Hot Gas" Mechanical Producers. Coke extraction from retorts is by Sector Extractor. The installation which has been in production for some months and was recently inaugurated, has a nominal daily capacity of 4,000,000 cubic feet of gas and includes complete coal and coke handling plant.

Photograph by courtesy of the Northern Gas Board.



WEST'S

GAS IMPROVEMENT CO. LTD

MILES PLATTING · MANCHESTER 10

Tel.: COLlyhurst 2961 Grams: Stoker, Manchester

London Office: Columbia House, Aldwych, W.C.2.
Tel.: HOLborn 4108-9 Grams: Wesgasco, Estrand

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RECENT CLAPHAM INSTALLATIONS AT BRADFORD

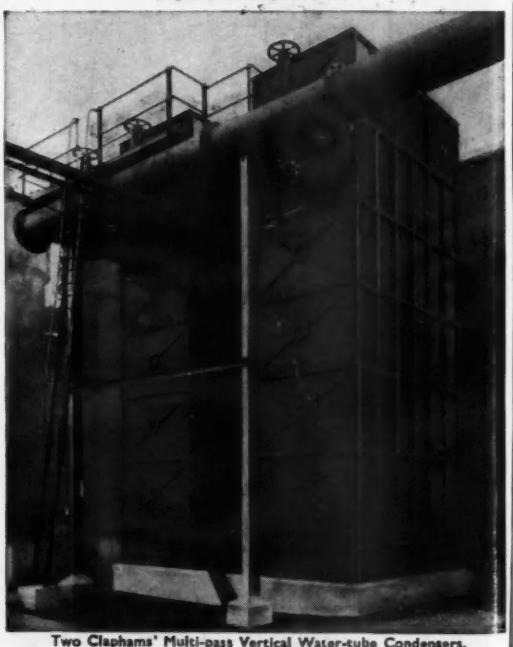
For over 100 years we have been serving the Gas Industry and the illustrations show equipment recently installed for the North Eastern Gas Board at Birkshall Works, Bradford.

Manufacturers of

- Condensing Plant
- Tar Extractors
- Washers (Pumpless Patent)
- Oxide Purification Plant
- Boxless Purifiers (Prov. Pat.)
- Liquid Purification Plant
- Mechanical Handling Plant
- Coke and Pan Ash Washers
- Purifier Control Valves
- Gas Pre-Heaters
- Briquetting Plants
- Refractory Brick Making Plant
- Special Pipes and Connections in cast iron and steel

Two Clapham-Barwick Pumpless Static Ammonia Washers

Internal deck level view of the Purifier Installation. (Eight 45 Feet Square Boxes.)



Two Claphams' Multi-pass Vertical Water-tube Condensers.

CLAPHAM BROS. LIMITED
MAKERS OF GAS WORKS EQUIPMENT SINCE 1837
KEIGHLEY · YORKS Tel: 2787-2788-Grams: 'Clapham Bros. Keighley'